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DESCRIPTIVE

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CATALOGUE

[IN PART]

*The Author*

OF

THE FISHES

OF

NEW BRUNSWICK AND NOVA SCOTIA,

By M. H. PERLEY, Esquire,

HER MAJESTY'S EMIGRATION OFFICER AT SAINT JOHN, NEW BRUNSWICK.

(SECOND EDITION.)

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FISHES are described as vertebrated animals, with cold red blood ; breathing by gills, through the medium of water ; without lungs. Body covered mostly with imbricated scales or plates, or with a smooth mucous skin. Move in water by means of fins instead of feet, which vary in number. Reproduced by eggs, which are usually fecundated after exclusion. Heart unilocular, or composed of one auricle and one ventricle. Head various ; no neck. Aquatic. Chiefly carnivorous.

Fishes have been divided into two great groups, viz.—the Bony, and the Cartilaginous. The first comprises by far the greatest number of species.

In these two great divisions, the Fishes of New Brunswick and Nova Scotia, so far as yet examined or known, are here classified and briefly described.

## CLASSIFICATION.

### GROUP I.—BONY FISHES.

ORDER 1.—Fishes with spinous rays in their fins.

- |                            |                                      |
|----------------------------|--------------------------------------|
| Family 1. <i>Percidæ</i> . | The Perch family.                    |
| 2. <i>Triglidæ</i> .       | Fishes with hard cheeks.             |
| 3. <i>Combridæ</i> .       | The Mackerel family.                 |
| 4. <i>Gobidæ</i> .         | The Goby family.                     |
| 5. <i>Lophidæ</i> .        | Fishes with wrists to pectoral fins. |
| 6. <i>Labridæ</i> .        | The Wrasse, or Rock-fish family.     |

ORDER 2.—Soft-finned fishes ; the fin-rays almost universally flexible.

- |                              |                        |
|------------------------------|------------------------|
| Family 1. <i>Cyprinidæ</i> . | The Carp family.       |
| 2. <i>Esocidæ</i> .          | The Pike family.       |
| 3. <i>Siluridæ</i> .         | The Sheat-fish family. |
| 4. <i>Salmonidæ</i> .        | The Salmon family.     |
| 5. <i>Clupeidæ</i> .         | The Herring family.    |

ORDER 3.—Fishes with ventrals under the pectorals, and the pelvis suspended to the shoulder bones—thus better adapted for ascending and descending than the preceding order.

- |                           |                                    |
|---------------------------|------------------------------------|
| Family 1. <i>Gadidæ</i> . | The Cod family.                    |
| 2. <i>Pleuronectidæ</i> . | The Flat-fish, or Flounder family. |
| 3. <i>Cyclopteridæ</i> .  | The Lump-fish family.              |

ORDER 4.—Fishes in which the ventral fins are always wanting.

- |                               |                 |
|-------------------------------|-----------------|
| Family 1. <i>Anguillidæ</i> . | The Eel family. |
|-------------------------------|-----------------|

### GROUP II.—CARTILAGINOUS FISHES.

ORDER 1.—Fishes with free gills,—they have in their gills a single wide opening, and a gill-lid, like the Bony fishes, but no gill-rays.

- |                               |                      |
|-------------------------------|----------------------|
| Family 1. <i>Sturionidæ</i> . | The Sturgeon family. |
|-------------------------------|----------------------|

ORDER 2.—Fishes with fixed gills,—these have the gills attached at the outer edge, with a separate opening, through which water from each gill escapes.

- |                             |                   |
|-----------------------------|-------------------|
| Family 1. <i>Squalidæ</i> . | The Shark family. |
| 2. <i>Raidæ</i> .           | The Ray family.   |

ORDER 3.—Fishes with round mouths formed into a sucker.

- |                                  |                     |
|----------------------------------|---------------------|
| Family 1. <i>Petromyzonidæ</i> . | The Lamprey family. |
|----------------------------------|---------------------|

**DESCRIPTION OF GROUP I.**  
**CONSISTING OF THE OSSEOUS, OR BONY FISHES.**

ORDER 1.—Fishes with spinous rays in their fins.

Family 1.—PERCIDÆ—The Perch family.

Genus 1.—*Perca*.

Species 1.—*Perca flavescens*—The American yellow Perch.

This beautiful fish is common in almost all the inland waters of New Brunswick and Nova Scotia. It is of a greenish yellow above, with golden yellow sides, crossed by seven transverse dark bands, the broadest upon the middle of the body; beneath, white. The back, and tail fins, brownish; the other fins, scarlet. Length, 6 to 12 inches. It spawns in May, and then resorts to the mouths of rivulets in great numbers.

The common yellow perch is considered one of the best known, and most widely distributed of all the fresh water fishes of North America. It is a northern fish, as its limits extend to the 50th parallel of north latitude.

It is very closely allied to the *perca fluriatilis* of Europe; and like that fish, is much esteemed by those who cannot obtain salt water species. It is readily transported from one lake or stream to another, and has been frequently introduced in pieces of water in America, where it did not previously exist, with much success.

The general habitat of the perch is in lakes and streams, not too rapid. It delights in a clear bottom, with grassy margin, or in rivers overhung with brush, and widening into some lake-like expanse. Here the perch roam in shoals, descending and rising while seeking their food, and shading themselves from the too great heat, among the aquatic plants, or under the broad leaves of the white water-lily.

Genus 2.—*Labrax*.

Species 1.—*Labrax Lineatus*—The striped Basse.

This fine fish is found on the sea coast of New Brunswick, and it also frequents many of its rivers and lakes. The upper part of the body is silvery brown; lower part of sides and abdomen, a beautiful clear silver colour; eight or more longitudinal black bands running the whole length of the fish, the lower ones terminating above the anal fin. Length, 1 to 3 feet.

The basse is a salt water fish, ascending fresh water streams to breed, in the spring, and for shelter during the winter. Very large fish of this species have been frequently taken in the Grand Lake, and the "thoroughfares" therewith connected, by night-lines, in the winter season. The basse abounds in most of those rivers of New Brunswick which flow into the Gulf of Saint Lawrence. It was formerly abundant in the Basin of Mines, and the Basin of Annapolis, but in each has become rare, owing to its unlimited destruction there at all seasons.

Along the New Brunswick and Nova Scotia shores of the Gulf of Saint Lawrence, the basse make their appearance in large schulls, in the early part of September. They keep around the islands, and between the outer bar and the beach in the lagoons, where they are often taken in nets, and also at night with torch and spear. As the season advances, and the weather becomes colder, they penetrate into bays, and arms of the sea, and even ascend the rivers some distance, where they spend the winter resting on the mud, in a half torpid state. The places which they frequent are easily discovered, the fish being seen through the clear ice when it first makes; large holes are cut in the ice, and the fish are lifted out with a circular net on a strong wooden bow, called a dip-net. All the fish in each locality, of whatever size, are thus taken; and in many of the northern rivers, especially the Richibucto, and North West Miramichi, where they were formerly very abundant, they are now quite scarce, and only found of small size.

The basse will frequently take the same artificial fly, (scarlet ibis and gold,) as is used in salt water, for the white or sea trout. From the avidity with which it seizes a hook baited with a piece of the flesh of a lobster, or with clams, and the smaller crustacea, it is probable that these form no inconsiderable portion of its food. The smelt is also a good bait for basse. A long line is requisite in basse fishing, as it is what sportsmen call, "a runaway fish." At the end of a hundred yards of line it affords great sport, being fierce, vigorous, and very active, not yielding until after a long and violent struggle with its captor. After the salmon family, it is unquestionably the most sporting fish of America. Its geographical range is from the Capes of the Delaware to the River Saint Lawrence.

The body of the basse is cylindrical and tapering, covered with large adhesive scales; lateral line obvious, running through the fourth stripe, and nearly straight. Altogether, it is very beautiful; and besides being one of the most sporting of American game fish, the basse is excellent food, the flesh being very firm, white, and well-flavoured.

Species 2.—*Labrax pallidus*—The little white Basse.

This diminutive basse is best known by its popular name of "white perch." It abounds in many of the lakes and streams connected with the River Saint John, but it is always found in localities where there is very little current, if any, and upon a soft bottom, in the vicinity of aquatic plants and weeds. The ordinary weight of the "white perch," is from 4 to 6 ounces; in September, they are often taken above half a pound in weight; the largest seen, weighed a pound. They are a very fine fish for the table, when in season.

In the numerous lakes near Halifax, and at Darling's Lake, near Hampton, in New Brunswick, this little basse is taken in great numbers, by anglers. It frequently takes the artificial fly, but is usually caught by bottom fishing, with the red-worm for bait. To those who like fishing with the float, the white perch affords great sport, as it bites very freely, and is generally caught in considerable numbers at any place which it frequents.

### Genus 3.—*Pomotis*.

Species 1.—*Pomotis vulgaris*—The common Pond-fish.

The *pomotis* is exclusively an American genus of the perch family. Its type was originally styled a *labrus* by Linnæus, Lacepede, and others; but in calling it a perch, the common people, according to Cuvier, exercised more discernment than naturalists.

This description of perch is very common in all those waters in which the yellow perch is found. It is generally from 6 to 8 inches in length, of a deep green colour, mixed with olive, and is easily distinguished by the bright scarlet spot behind the opercle. Among rural anglers it is known as the "sun-fish," from the glittering colours it displays while basking in the sun. It is seldom dressed for eating, being an exceedingly bony, dry fish, but is often caught for amusement.

It has a wide geographic range, extending from Lake Huron, throughout the Eastern States of the Union, and all the British Provinces.

Family 2.—TRIGLIDÆ—Fishes with hard cheeks.

Genus 1.—*Cottus*—The Sculpin.

Species 1.—*Cottus Virginianus*—The common Bullhead.

Species 2.—*Cottus Groenlandicus*—The Greenland Bullhead.

The sculpin is very numerous on all the fishing grounds of the New Brunswick and Nova Scotia coasts, and is sometimes a great annoyance to line-fishers, who regard it with much aversion. When freshly taken from the water, and irritated, it presents rather a formidable appearance; but nevertheless, it is said not to be a bad article of food.

When the line-fishers in the Bay of Fundy find the sculpin biting too freely, they immediately change their ground to avoid it.

Besides the two species named, it is believed that there are several other species, as well as some varieties. The sculpin ranges the coast of North America from Virginia to Baffin's Bay, and is a favourite food of the Greenlanders.

It is exceedingly voracious, devouring small fish, crabs, and sea-eggs; in fact, nothing comes amiss to the sculpin.



Genus 2.—*Gasterosteus*.Species 1.—*Gasterosteus biaculeatus*—Two-spined Stickleback.

This diminutive fish abounds in the estuaries of rivers, and in those creeks of New Brunswick and Nova Scotia to which the sea has access. It is usually found about two inches in length, with two distant spines on the back, and a third near the dorsal; and a strong serrated spine on each side, representing the ventrals. It is exceedingly active in its movements, and will throw itself a considerable distance out of water. Its appetite is voracious; it feeds on worms and insects, and the fry and roe of other fish, great quantities of which it devours.

It is believed that more than one species of stickleback exists in the waters of New Brunswick and Nova Scotia. They are all very pugnacious, and when confined will destroy each other. They are only worthy of notice on account of their destructive propensities, and because they are sometimes used as bait for larger fish. In some parts of England, they are so abundant that they are employed as manure.

Genus 3.—*Sebastes*.Species 1.—*Sebastes Norvegicus*—The Norway Haddock.

This is a northern fish, common to both sides of the Atlantic; on the coast of North America, it has been found as far south as New York, where however, it is very rare. It is frequently caught in Boston Bay, while fishing near shoal ledges, contiguous to deep water. Among fishermen, it is known by the popular names of "red sea perch"—"the rose fish"—and the "snapper." The writer has seen a specimen taken near Portland, (Maine) and believes it to exist along the coast of Nova Scotia, becoming more plentiful towards the north, from whose waters it originally wandered.

In June 1851, some very fine specimens of the Norway haddock were caught in the Bay of Fundy, off Port Simonds, east of the Harbour of St. John. They weighed about a pound and a half each, were of a brilliant red colour, in very fine condition, and when brought to table, were exceedingly palatable.

This fish is said to attain the length of two feet; its body is oblong, compressed, covered with scales. All the upper part of the body and the fins are of a bright carmine red; darker upon the head and back, lighter upon the sides; nearly white beneath; a brown blotch on the posterior part of the opercle. Length of the head, from tip of lower jaw when closed, to posterior angle of operculum, one third the length of the fish; top of the head flattened. Eyes very large; pupils black; irides yellow; diameter of eye equal to one third the length of the head. Jaws armed with numerous, minute, sharp teeth; upper jaw very protractile; an emargination in its centre,

into which the extremity of the lower jaw shuts, when the mouth is closed. Chin prominent. Teeth in vomer, and palatine bones.

The Norway haddock is found abundantly on the coast of Newfoundland. It feeds on flounders and other small fish, and takes the hook readily. In Norway, it is eaten largely, being considered a great delicacy. In the deep bays on the southern coast of Greenland, it is caught in great numbers, on baited hooks attached to very long lines; the Greenlanders use the spines for needles.

### Family 3.—SCOMBRIDÆ.

#### Genus 1.—*Scomber*—The Mackerel.

Species 1.—*Scomber vernalis*—The Spring Mackerel.

Species 2.—*Scomber grex*—The Fall Mackerel.

These two species of mackerel are generally believed to be but one; but Cuvier considers them as different, and in this has been followed by Dr. DeKay of New York. The *scomber vernalis* is the ordinary mackerel of commerce, while *scomber grex* would seem to be those little mackerel about ten inches in length, which are found in scattered numbers every where, and are called by the fishermen of the Bay of Fundy, "tinker mackerel," from their wandering habits.

Although the mackerel is caught in great quantities on the northern coast of New Brunswick, and within the Bay of Chaleur, as also around the Magdalen Islands, yet it is rarely known to visit the coast of Labrador. It is stated by Mr. Horatio Robinson Storer, of Boston, who visited the Labrador coast in 1849, that mackerel appeared there in great abundance that season, at the Island of Little Mecatina; but no fishing vessels being at hand, they departed again unmolested, the few settlers on that desolate coast having neither nets or lines for taking them. The mackerel fishery of Nova Scotia furnishes one of its largest exports. In 1850, no less than 96,650 barrels of mackerel were exported from the port of Halifax alone. Many of these were taken in the vicinity of Sable Island, and were of the finest quality.

Mackerel were formerly abundant near the coasts of Newfoundland, but none have been taken there since 1837. They were also plentiful formerly in the Bay of Fundy, near Grand Manan and West Isles, where but few are now taken.

The great resort of the American mackerel schooners is on the north and east side of Prince Edward Island, and in the vicinity of Miscou, at the entrance to the Bay of Chaleur. There is also good mackerel fishing within the Straits of Northumberland, especially off Buctouche and Richibucto.

The mackerel taken in the early part of the season are generally very poor; they improve in quality as the season

advances, those taken latest being by far the best. It is now considered settled, that the mackerel is not a migratory fish, but draws off into deep water, at the approach of winter, and returns to the shallow water near the shores, at the beginning of summer, for the purpose of depositing its spawn.

#### Genus 2.—*Thynnus*.

##### Species 1.—*Thynnus vulgaris*—The common Tunny.

This fish is better known by its popular name of "horse-mackerel;" on the Atlantic coast of Nova Scotia, the fishermen generally call it the "albicore." It is there frequently taken from 6 to 12 feet in length; sometimes it is enclosed in the seine with mackerel. The fishermen are then anxious to get rid of it, as quickly as possible, because in its struggles, it is apt to break directly through the seine, causing great damage to the net, and the loss of all the other fish in it.

Dr. Storer, in his Report on the Fishes of Massachusetts, mentions one of these fish as having been taken near Cape Anne, which was 15 feet in length, and weighed about 1000 lbs., but he considers it a rare fish in the waters of that State. A fisherman at Halifax stated to the writer, that he had taken a "horse-mackerel" near that harbour, which when cut up filled three puncheons.

In the Mediterranean, the tunny is a common fish, generally swimming in shoals, and has long been celebrated there for its delicacy. It is supposed to be a wanderer from the Mediterranean, as single specimens are occasionally taken upon the coast of Great Britain, on the banks of Newfoundland, and along the coast of North America, as far south as New York. In America, it is not held in much estimation as an article of food.

The upper surface of this fish is blackish; the sides, silvery; beneath, white. No coloured lines or spots; tongue and inside of the mouth, black. Irides golden, with greenish reflections. It is characterised by very large and long pectoral fins; the tail is crescent shaped, very wide across the tips. The jaws when closed are nearly equal; the tongue, large and broad; the gape of the mouth very large. The scales on the back, in front of the first dorsal, and beneath the pectorals, also very large. Gill covers exceedingly large, perfectly smooth, of a silvery gray colour. The rays of the first dorsal fin are very strong; this fin shuts entirely into a deep groove, and, when unexpanded, is perfectly invisible.

In the Mediterranean, the tunny fishery is very important; in Sicily it forms one of the most considerable branches of the commerce of the Island. The tunny is there cured, by taking out the whole of the inside, washing the flesh with brine, and cutting it in slices, which are covered with pounded salt. These slices are packed in barrels, with alternate layers of

salt; and when sent to any distance, they are packed in smaller barrels with fresh salt.

The flesh of the tunny is so solid, that it seems something between fish and meat; it is as firm as sturgeon, but finer flavoured. In France, it is dressed in a variety of ways, and always excellent. It is served as a ragout, or plain fried or boiled; pies are made of it, which are so celebrated as to be sent all over France—they will keep good for six weeks or two months. Before it is cooked, the flesh has the red appearance of beef, but when dressed it becomes more pale.

In America, this fish is of inferior quality, or else is greatly undervalued. Of late years, it has been often taken at Newfoundland, where it appears to become more plentiful yearly, and to rise in public estimation.

### Genus 3.—*Xiphias*.

#### Species 1.—*Xiphias gladius*—The Sword-fish.

This fish is met with along the Atlantic coast of North America, but Richardson does not include it in his list of northern fishes, its presence at the north not having been ascertained, with certainty, by those who had referred to it.

It is usually discovered by the projection of its dorsal fin above the surface of the water, when in pursuit of mackerel, upon which it feeds.

The back and upper part of the sides are of a sky-blue colour; beneath, silvery grey; surface smooth. Length, from 10 to 15 feet. The dorsal fin in the young fish is single; it becomes effaced in the middle, and forms two distinct fins in the adult. The upper jaw is prolonged into a flattened sword; the edges bluntly trenchant, approach each other, and terminate in a blunt point. The lower jaw is short and pointed; the gape of the mouth extends behind the orbits. It has no teeth, but slight asperities may be felt on the lower jaw, and velvet-like teeth in the throat. The tail, like that of the tunny, is crescent-shaped, with 17 rays. The sword-fish has a great range on the eastern side of the Atlantic, and is one of the few fish which cross that ocean.

These fish are taken about 15 or 20 miles from land, in pursuit of shoals of mackerel, on which they feed. They are captured by means of an instrument called a "lily-iron," from the form of its shaft, or wings, which resemble the leaves of a lily. This instrument is thrown like a harpoon, with great force into the fish, the attempt being always made to strike it in front of the dorsal fin. When wounded, it sometimes frees itself from the iron by its violent struggles. When unmolested, it is frequently observed to spring several times its length forward several feet above the surface of the water.

On the coast of the United States, the flesh of the sword-fish is eaten both fresh and salted. Before being pickled, the

flesh is cut into slices, and it is said to remain good for a year; in Massachusetts several hundred barrels are put up annually, the greatest number of these fish being taken off Martha's Vineyard.

This fish has been frequently seen off the Atlantic coast of Nova Scotia, but it is seldom taken, not being in sufficient numbers to render its pursuit an object.

#### Family 4.—GOBIDÆ.

##### Genus 1.—*Anarrhicas*.

##### Species 1.—*Anarrhicas lupus*—The Wolf-fish.

The general colour of this voracious fish is a leaden gray. It has 11 or 12 broad black bands on the sides, becoming indistinct toward the tail; the belly is of a brownish ash-colour, tinged with pink.

Its usual length is from 30 inches to 5 feet; but in high northern latitudes, it is said to attain the length of 6 and 8 feet. It has been caught at Rockaway beach, on Long Island, (New York,) which is supposed to be its extreme southern limit.

Dr. Storer says it is captured on the coast of Massachusetts, generally about rocky ledges, at all seasons of the year, but greater numbers are taken in winter than at any other time. Its ferocious-looking, cat-like head, and exceedingly coarse, thick skin, covered with slime, give it a hideous appearance, and render it an object of such disgust, that it is thrown away almost as soon as caught; yet many fishermen regard it as excellent food. Dr. Storer says he has had it upon his own table, and that few fish are superior to it, when broiled. The flesh is said to have somewhat the flavour of salmon, when smoked.

This fish is often caught at the entrance to the Bay of Fundy, sometimes near Grand Manan and Campo Bello. In the spring of the year, it is taken frequently in Saint Mary's Bay; and it is caught at all times along the Atlantic coast of Nova Scotia.

The voracious and savage character of the wolf-fish, or "sea-wolf," as it is often called, is apparent from its formidable array of teeth, and its vicious propensities when first drawn from the water. Dr. DeKay says, such marvellous stories are related of the strength and power of its jaws, that they more properly belong to the romance of natural history.

Very many fishermen have a great dread of this fish, and seek to get rid of it, as quickly as possible; while others lose not a moment in dispatching the savage "sea-wolf," by heavy well-aimed blows upon the head. It fights desperately even when out of its element, and inflicts severe wounds if not cautiously avoided.

The food of the wolf-fish consists of crustaceous and testaceous animals, which its powerful jaws, and rounded molar

teeth, enable it to break down sufficiently for its purpose. It swims rapidly, with a lateral, undulating motion, and is said to sprwn in May and June, among rocks and reefs, near which it is generally caught.

#### Family 5.—LOPHIDÆ.

##### Genus 1.—*Lophius*.

##### Species 1.—*Lophius Americanus*.—The American Angler.

This fish has a very disgusting appearance, and its monstrous form has given rise to many popular names, such as "sea-devil," "fishing-frog," "bellows-fish," "goose-fish," "monk fish," and various others.

The angler belongs to a small and singular group of fishes, designated by Cuvier, *pectorales pédiculées*, from the peculiar formation of the pectoral fins, which are palmated, and shaped not unlike the hand of a child; they are placed very far forward on the body; by these and the aid of the ventrals, which, from their position, perform the office of hind feet, the fish can creep on the bottom like a little quadruped.

A specimen about 3 feet long was observed on Long Beach, above Great Salmon River, in the Bay of Fundy, in September 1850. It was taken in the weir there, which it had entered in pursuit of herrings. Several specimens were seen in November 1850, on the shores of Annapolis Basin, near Digby, where they were thrown up by a severe storm. They are said to abound in that Basin, and to be very destructive to the shoals of herrings which resort there.

Yarrell says, that this fish in its appetite is very voracious, and as it is not a rapid swimmer, has recourse to art to satisfy its appetite. Upon its head are two long, slender appendages, the first of them broad and flattened towards the ends, and at the dilated part, having a shining silvery appearance, not unlike a little fish. While couching close to the ground, the fish, by the action of its ventral and pectoral fins, stirs up the sand, or mud; hidden by the obscurity thus produced, it elevates these appendages, moves them in various directions by way of attraction as a bait, and the small fishes, approaching either to examine or seize them, immediately become the prey of the angler, and thence it derives its general name.

The head of this fish is wide, depressed; the mouth nearly as wide as the head. The gape of the mouth in the specimens seen was 9 inches; and the numerous double rows of teeth, some recurved and conical, and others long and acute, give the enormous gaping mouth a frightful appearance. These fish are never eaten, but they are sometimes opened for the sake of the numerous fishes found in their stomachs, which are monstrously large, as compared with the length of the fish.

The colour of the whole upper surface of the body, uniform brown; fin membranes, darker; under surface of the body, ventral and pectoral fins, white; tail, dark brown, almost black.

This fish is found all along the coasts of Nova Scotia and New Brunswick; it has been known to measure 5 feet in length, but its most common size is about 3 feet.

#### Family 6.—LABRIDÆ.

##### Genus 1.—*Ctenolabrus*.

##### Species 1.—*Ctenolabrus ceruleus*—The Sea Perch, or Cunner.

This fish is common on the Atlantic coast of North America, from Delaware Bay to the shores of Newfoundland, and is known by a variety of names. In New York, it is called the "bergall," a name of Dutch origin; and also the "chogset," derived from the Mohegan dialect. On account of its prevailing colour, it is often called "blue-fish." At Boston, where this fish is taken in myriads, it is called "blue-perch;" but among eastern fishermen generally, it is known as the "cunner."

There is scarcely any fish whose colours are so variable as this species. In the smaller individuals, the general colour is blue, more or less mixed with brown; and faint, dusky, transverse bars may frequently be seen. In the larger species, such as are 12 inches long, the colours are bright and showy, a light orange-coloured tint pervading the whole body; the head and gill-covers of a beautiful chocolate colour, mixed with light blue; the fins of a blue, more or less brilliant.

The jaws of the "cunner" are covered with thick fleshy lips, whence this family derives its name of *labrus*, lipped—that is, thick-lipped fishes.

The first specimens of these fish seen by the writer in the Bay of Fundy, were taken with hook and line, in 1844, from the rocks on the sea shore near Black River, east of the Harbour of Saint John. These were of a reddish brown colour; the body elongated, compressed, the depth equal to one fourth of the length.

These fish frequent deep pools among rocks, hide themselves in *fuci*, and are said to feed chiefly on crustacea. Where their haunts are known, and are accessible, there is much fishing for them, on the coasts of Maine and Massachusetts, with rod and line, for they take bait very readily, the first taken being generally the largest. They are skinned before being dressed; the fish is sweet and palatable.

Mr. H. Robinson Storer says, they are so plentiful in the Gut of Canso, that by sinking a basket with a salt fish tied therein, he continually caught them by the score, for a supply of fresh fish while at sea. They are abundant every where on



the Atlantic and Gulf coasts of Nova Scotia, but being of small size, are very little esteemed

Genus 2.—*Tautoga*.

Species 1.—*Tautoga Americana*—The Tautog, or Black-fish.

The natural geographic range of this delicious fish is only from the Capes of the Delaware to Cape Cod; but a few years since, a number were brought into Massachusetts Bay, in well-boats, and placed alive in its waters. They have since increased there so rapidly, that the Boston market has now a full and regular supply.

It would seem that northern waters agree with this fine fish, for it has extended its range along the coasts of Massachusetts and Maine, and is now taken in the Harbour of Saint John. During the season of 1851, many good fish of this species were exhibited for sale in the fish-market of Saint John; the largest weighed eight pounds. One specimen of the length of 19 inches, weighing four pounds, was bought by the writer in July, and when brought to table, was found in good condition, and of excellent flavour.

The common black-fish, or *tautog* in the Mohegan dialect, (which is also said to mean *black*) is a well known and savory fish at New York, affording equal pleasure to the angler and the epicure. The colour of this fish is indicated by its name, but varies considerably from deep dull black to glossy blue black, with metallic reflections, and occasionally to dusky brown. The body is elongated and compressed, the back much arched from the dorsal fin to the snout, but straight posteriorly. The lateral line follows the curve of the back. The lips are very thick and fleshy, the teeth stout and of a conical form. The tail is very short, nearly even, and slightly rounded.

The usual market weight of this fish, at New York, is two pounds, but specimens have been taken weighing twelve pounds, and even more.

Rocky shores and bottoms are the haunts of the black-fish; it is readily taken with the hook baited with crabs, clams, or other small shell-fish, from April until November. It is a stationary inhabitant of the salt water, never visiting rivers, like some other sea-fish, and is supposed to feed almost exclusively on the smaller shell-fish.

The black-fish may be kept for a long time in ponds or cars; and even fed and fattened there. When benumbed by the cold of winter, it refuses to eat any more, and a membrane forms over the vent and closes it. With the returning warmth of spring, the fish regains appetite; and the blossoming of the dog-wood, (*cornus florida*.) is understood to denote the time of beginning to fish for tautog. It is remarkable for retaining life a long time after taken out of the water.



Though the hand-line is generally used for black-fish, the rod is sometimes employed with great advantage. A stout trolling rod, with a strong flaxen line, and a reel, are the best implements, according to Frank Forrester. Two hooks should be used, attached to hook links of trebly-twisted gut, of the respective lengths of 12 and 15 inches, both links being securely fastened to a small brass ring. This ring is looped on the end of the line to which the sinker is appended. For all sea-fishing with bait, in shoal water, this is the best arrangement of hooks.

The black-fish is altogether a bottom fish, and is generally caught in whirls and eddies, in the immediate vicinity of rocks and reefs; it must be struck sharply, and pulled up without a moment's delay.

Attempts have been made to extend the limits of this fish to the south, a smack load having been carried from Rhode Island very many years ago, and turned adrift in the Harbour of Charleston, South Carolina. Some are now occasionally caught there, weighing from one to two pounds only, but never in such quantities as to be brought to market. The southern extension was therefore a failure; but as the black-fish has naturally found its way from Massachusetts to the Bay of Fundy, and is already taken there of large size, it may be concluded that it will establish itself in northern waters, and soon become plentiful—a matter of rejoicing to the sporting fisherman, and to all who love the delicacies of the table.

ORDER 2.—Soft-finned Fishes; the fin-rays almost universally flexible.

Family 1.—CYPRINIDÆ.

Genus 1.—*Catostomus*.

Species 1.—*Catostomus communis*—The common Sucker.

This fish abounds in all the rivers and streams of New Brunswick. It is from 10 to 14 inches in length; the flesh is seldom used as food. The body is long, rounded, and tapering; the head dark green above, verging to black; the cheeks bronze and golden. The upper part of the body a dark purplish colour, with pink and metallic tints on the sides, frequently of a resplendent golden hue, extending over the abdomen; beneath, white. The head is smooth, and without scales; the mouth, protractile, with thick puckered lips, the lower lip two-lobed. This fish is exclusively North American.

James L. Price, Esquire, of Ludlow, on the Miramichi, whose observations in natural history are very accurate, states that the flesh of the sucker, though rather insipid food, is eaten by many persons, usually fried while fresh, but sometimes slightly salted and dried. Mr. Price says it feeds chiefly on

aquatic worms and larvæ, and seldom takes bait. It spawns early in summer, after which it becomes meagre and tasteless; during the early part of May, before spawning, it is in best condition. However much the humble properties of the sucker may protect it from the voracity of man, it is not without formidable enemies. Its young are greedily devoured by the king-fishers; it is the chief prey of the fish-hawk, and it affords a desirable repast even to the dainty trout. Mr. Price mentioned to the writer, that he once met with a trout of considerable size, in the Miramichi, which had been choked in an unsuccessful attempt to swallow a large sucker.

In the autumn, the sucker is abundant in the New York markets; at that season, its flesh is considered of the best quality, although very inferior and tasteless.

### Genus 2.—*Leuciscus*.

#### Species 1.—*Leuciscus chrysoleucas*—The yellow Shiner.

The general colour of this very pretty fish, is a beautiful golden; the top of the head and back, black; the gill-covers, a brighter yellow than the sides. Its usual length is from 5 to 7 inches, and it is found in great abundance, in those parts of ponds and quiet streams which are frequented by the yellow and white perch. The writer has taken them in great numbers, in the latter part of summer, in the waters near Hampton Ferry; it is an exceedingly delicate, finely flavoured fish, when eaten fresh, and may be considered one of the most savory of the smaller fresh water fishes of New Brunswick. It has received the popular name of carp, to which family it properly belongs.

#### Species 2.—*Leuciscus cornutus*—The Red-fin.

This beautiful little fish is found in many of the swift and limpid streams of New Brunswick, associated with brook trout. It is generally about 5 or 6 inches in length, very lively and active in its movements. All the fins are broadly margined with deep scarlet, whence it gets its name of the "red-fin," although it is also generally known as the roach. The top of the head is covered with minute pointed tubercles, which are also seen on the sides of the snout, and form a regular series along the sides of the lower jaw.

#### Species 3.—*Leuciscus pulchellus*—The Roach Dace, or Beautiful *Leuciscus*.

This fish is somewhat larger than the species last mentioned, but its colour is more silvery, and it has not the brilliant scarlet fins of the roach, all its fins being light coloured; nor has it the roughness on the top of the head. It is not generally found in swift water, but appears to delight in eddies and pools, where it may be caught in great numbers, when on the feed.

Species 4.—*Leuciscus argenteus*—The shining Dace.

This pretty little fish varies from 2 to 6 inches in length. The whole surface of the body is silvery ; rather darker on the back. From its brilliancy, it is usually called the "shiner."

The three species last mentioned, all take the artificial fly readily, and are often caught by fly-fishers while angling for trout ; the red-fin is the best for the table. They are in the best condition during the month of May.

Species 5.—*Leuciscus cephalus*—The Chub.

The chub is well known in every river and stream of New Brunswick and Nova Scotia frequented by other fresh water fishes ; it is taken of all sizes, from 4 to 16 inches. In the River Saint John, in the Miramichi at Boiestown, and in the Hammond River, the writer has taken chub by fly-fishing, weighing three pounds and upwards. The chub also takes bait readily, but is a very timid fish ; and if once disturbed or frightened, will not bite again for some time. It is considered a coarse fish, but those of large size, eaten fresh, are very palatable. Mr. Yarrell says, that broiling chub with the scales on, is the best mode of preparing it for table.

Species 6.—*Leuciscus atronotus*—The Brook Minnow.

This very little fish is found in almost every brook in great numbers. It is usually about an inch and a half in length, and has three bands on its sides, running longitudinally ; the lower a broad black band, then a golden yellow band, somewhat narrower, and above that, a narrow dark band ; when the fish is swimming, these three bands give it a pleasing appearance. It is only caught as bait for larger fish, especially for large trout, which prey upon it greedily.

Genus 3.—*Fundulus*.Species 1.—*Fundulus fasciatus*—The striped Killifish.

In all the salt water creeks and bays of New Brunswick and Nova Scotia, this fish abounds. In length, it is from 1 to 3 inches, the sides of a brassy yellow tinged with green. It presents much variety in its markings, having from twelve to eighteen blackish bars, often obscure, and two to five longitudinal stripes.

Its popular name is derived from its abundance in creeks and estuaries, which the Dutch settlers at New York termed "kills." It is also known by its Indian name of "mummachog," corrupted by the English settlers on the Gulf shore of New Brunswick, where it abounds, to "mammychub."

It is only taken as bait for other fishes. Some of these fish which were caught in the Harbour of Shediac in a landing net, were observed to be remarkably tenacious of life, and to live a long time out of the water after being hung up in the net.

Family 2.—SILURIDÆ.

Genus 1.—*Pimelodus*.

Species 1.—*Pimelodus catus*—The common Cat-fish.

This unsightly fish is found in all those ponds and streams where the yellow and white perch are taken, and is sometimes called the "horned pout;" its length is from 6 to 10 inches. The cat-fish is not eaten in New Brunswick, but in Maine and Massachusetts it is highly esteemed as an article of food, and by many preferred to every other species of fresh water fishes, except trout; it is usually fried, the skin being first removed.

Family 3.—SALMONIDÆ.

Genus 1.—*Salmo*.

Species 1.—*Salmo fontinalis*—The Brook Trout.

Nearly every lake and stream in New Brunswick and Nova Scotia, is furnished with a greater or less number of this species of the salmon family. It is taken of all sizes, from 6 to 20 inches, and is so well known, as scarcely to need a description. Its principal characteristics are—the vermilion dots and larger yellow spots in the vicinity of the lateral line, and the tri-coloured fins, these being blackish on their edges, broadly bordered with white, and the rest scarlet.

The brook trout is a migratory fish; when in its power, it invariably descends to the sea, and returns to perpetuate its species, by depositing its spawn in the clearest, coolest, and most limpid waters it can find. The opinion of Mr. Herbert, ("Frank Forrester") that there is but one distinct species of the brook trout in North America, cannot be disputed. During the last thirty years, the writer has caught many thousands of these trout, in numerous rivers, lakes, streams and estuaries, in the lower Provinces and in Maine, and can safely say, after close and attentive examination, that he has never seen but one species of the brook trout, whatever naturalists may say to the contrary.

Various causes have been assigned for the great variety in the colour of the brook trout. One great cause is the difference of food; such as live upon fresh water shrimps and other crustacea, are the brightest; those which feed upon May-flies and other common aquatic insects, are the next; and those which feed upon worms are the duller and darkest of all.

The colour and brilliancy of the water has also a very material effect upon the colour and appearance of *salmo fontinalis*. Professor Agassiz has made some very curious experiments with respect to the colours of fishes, especially the salmonidæ; and he has ascertained beyond a doubt, not only that trout of different neighbouring waters are effected by the colour and

quality of the water, but that trout of the same river vary in colour, accordingly as they haunt the shady or sunny side of the stream.

The fish of streams rushing rapidly over pebbly beds, are superior both in appearance and quality to those of ponds, or semi-stagnant brooks. But this may arise not so much from any particular components of the waters themselves, as from the fact, that rapidly running and falling water, is more highly aerated, the atmosphere being more freely intermingled with it, and therefore more conducive to the health and condition of all that inhabit it.

The brook trout of America, says Mr. Herbert, is one of the most beautiful creatures, in form, colour, and motion, that can be imagined. There is no sportsman actuated by the true animus of the pursuit, who would not prefer basketing a few brace of good trout, to taking a cart load of the coarser and less game denizens of the water. His wariness, his timidity, his extreme cunning, the impossibility of taking him in clear and much fished waters, except with the slenderest and most delicate tackle—his boldness and vigour after being hooked, and his excellence on the table, place him, without dispute, next to the salmon alone, as the first of fresh water fishes. The pursuit of him leads into the loveliest scenery of the land; and the season at which he is fished for, is the most delightful portion of the year.

The brook trout rarely exceeds three pounds in weight; and no well-authenticated case is on record, of one of the species having reached the weight of six pounds, in these Lower Provinces.

#### Species 2.—*Salmo ferox*—The great grey Trout.

This fish is found in all the large lakes of New Brunswick, and in very many of those in Maine, but it is believed not to exist in the lakes of Nova Scotia; it is called by the lumberers the "togue;" the Indians designate it by a name equivalent to "fresh water cod."

It is found in great numbers and of large size in the Eagle Lakes, at the head of Fish River; in the St. Francis Lakes, from which flows the river of that name; and in the Metapediac Lake, which discharges itself into the Restigouche, and in the Miramichi Lake, at the head of that river.

In Lake Temiscouata, this fish has been taken of the weight of 21lb; it is there called the "tuladi." It is often taken of the weight of 12lb and upwards, in the Cheputneticcook Lakes, at the head of the eastern branch of the Saint Croix. One sporting friend informs the writer, that he caught two of these fish on the Saint Croix Grand Lake, one of which weighed 8lbs., and the other 13lbs.; but that he saw one, taken by a night-line, which weighed 25lbs. Another sporting friend, a resident of New York, informs the writer that he has

visited the lakes on the western branch of the Saint Croix, where he caught several of the "togue," weighing from 4lbs. upwards. The largest he caught measured 29 inches in length, but weighed 8lbs. only, not being in good condition.

It has been found of late years, that this species of fish exists in considerable numbers in Loch Lomond, 12 miles from the City of Saint John; and they have in consequence, been sought after by sportsmen, who take them from a boat, by trolling over the deepest portions of the Loch.

A specimen of this fish, taken in Loch Lomond in 1848, was sent to the writer by Charles Johnston, Esquire, High Sheriff of Saint John, which was 24 inches in length, and weighed 7½lbs. On a careful examination and dissection of this fish, it was found to correspond exactly with the fish described by Mr. Yarrell as *salmo ferox*, the great grey trout of Loch Awe.

In Scotland, this fish is taken from a boat rowed gently through the water; the bait, a small fish guarded by several good sized hooks. They are extremely voracious, and having seized the bait, will allow themselves to be dragged by the teeth for forty or fifty yards, and when accidentally freed, will again immediately seize it. The young fish up to 3lbs. weight rise freely at the usual trout-flies; the writer has often taken them up to that weight by fly-fishing, but never larger.

When in perfect season and full grown, it is a handsome fish, though the head is too large and long to be in accordance with perfect ideas of symmetry in a trout. The colours are deep purplish brown on the upper parts, changing into reddish gray, and thence into fine orange yellow on the breast and belly. The body is covered with markings of different sizes, varying in number in different individuals. Each spot is surrounded by a pale ring which sometimes assumes a reddish hue; the spots become more distant from each other as they descend below the lateral line, and the lower parts of the fish are spotless. The fins are of a rich yellowish green colour, darker towards their extremities. The tail is remarkable for its breadth and consequent power.

The flavour of this fish is coarse and indifferent; the flesh is of an orange yellow, not the rich salmon colour of the common trout, in good condition. The stomach is very capacious, and generally found gorged with fish; it is very voracious, and well deserves the name of *salmo ferox*.

### Species 3.—*Salmo trutta*—The Salmon Trout, or White Sea Trout.

This beautiful trout abounds in the Gulf of St. Lawrence; it is found on the northern shores of New Brunswick, and in the estuaries of those rivers of New Brunswick and Nova Scotia which flow into the Gulf, and the Strait of Canso, early

in June—it is caught in nets at the Magdalen Islands in summer, and salted for export. Many sportsmen resort annually to River Philip in Nova Scotia, during the month of June, to fish for these sea-trout, which enter the estuary of the river at that season. No specimen of this fish has yet been seen in the Bay of Fundy, which it is supposed not to frequent.

The flesh of the salmon trout is of a brilliant pink colour, and most excellent; its exceeding fatness early in the season, when it first enters the mixed water of the estuaries, is such, that it can be preserved fresh but a very short time.

The body of the fish is rather deep for its length; the lateral line is very nearly straight, passing along the middle of the body, the scales adhering closely. The upper part of the head and body, a rich sea-green colour; the lower part of the sides and belly, a brilliant silvery white. The fins white, except the dorsal, which is nearly the colour of the back.

Sir William Jardine in speaking of this fish, accurately describes its habits, as observed in New Brunswick. He says,—"In approaching the entrance of rivers, or in seeking out as it were some one they preferred, shoals of these fish may be seen coasting the bays and harbours, leaping and sporting in great numbers, from about one pound, to three or four pounds in weight; and in some of the smaller bays, the shoal could be traced several times circling it, and apparently feeding."

Mr. H. Robinson Storer, during his visit to Labrador in 1849, met with a single specimen of the salmon trout of the Gulf, at Red Bay, in the Straits of Belleisle, and not being acquainted with the fish, designated it *salmo immaculatus*. The scientific description he gives, is accurately that of the *salmo trutta marina*, and is as follows:—"Colour—Silvery on sides and abdomen; darker on back; no spots. Description—Length of head, about one-sixth length of body; depth of head, two-thirds its length; greatest depth of body, directly in front of dorsal fin, equal to length of head. Upper jaw the longer. Jaws with numerous sharp incurved teeth. Eyes laterally elongated; their diameter one-third the distance between them. Opercles rounded posteriorly; lower portion of operculum naked, marked with concentric striæ; preopercle larger than in the *fontinalis*. Scales larger than those of the *fontinalis*. Lateral line commences back of superior angle of opercle, and, assuming the curve of the body, is lost at the commencement of the caudal rays. The first dorsal fin commences just anterior to median line; is nearly quadrangular. Adipose fin situated at a distance back of the first dorsal, little less than one-half the length of the fish. Pectorals just beneath posterior angle of operculum; their length three-fifths that of the head. Ventrals just beneath posterior portion of first dorsal; the plates at their base very large. The anal is situated at a distance back of the ventrals just equal to length of head,



and terminates directly beneath the adipose fin; of the form of first dorsal. Caudal deeply forked; its length equal to greater depth of body. Dorsal 9; pectorals 13; ventrals 9; anal 11; caudal 30; length, 13½ inches."

To the epicure, a fresh caught salmon trout of the Gulf of Saint Lawrence, especially early in the season, will always afford a rich treat. The sportsman will find it a thoroughly game fish, rising well at a brilliant fly of scarlet ibis and gold, and affording sport second only to salmon fishing. The writer has caught this fish, with the scarlet ibis fly, in the break of the surf, at the entrance of Saint Peter's Bay, on the north side of Prince Edward Island, of the weight of 5 lbs.; but the most sporting fishing is from a boat, under easy sail, with a "mackerel breeze," and oftentimes a heavy "ground swell." The fly skips from wave to wave, at the end of thirty yards of line, and there should be at least seventy yards more on the reel. It is truly splendid sport, as a strong fish will oftentimes make a long run, and give a sharp chase down the wind.

At Guysboro' and Crow Harbour, in the Strait of Canso, there is excellent sea-trout fishing at the end of June, as also in the Great Bras D'Or Lake, within the Island of Cape Breton. The largest sea-trout rarely exceed seven pounds weight; these are taken around the Magdalen Islands, and in the estuaries of all the rivers of the Labrador coast, from Mingan to the northern end of the Straits of Belleisle. At the entrances to many of these rivers, the sea-trout were taken in the greatest abundance, of four pounds weight and upwards, during the summer of 1851, by the Officers of Her Majesty's Sloop "Sappho," which visited the whole of that coast, as far north as Chateau Bay, under command of Captain the Honorable A. A. Cochrane.

Alluding to the sporting character of the white, or sea-trout fishing, in the Gulf of Saint Lawrence, Frank Forrester, in his "Fish and Fishing," says—"Right well would it repay some of our gallant yachters, to turn the heads of their light crafts easterly, and bear away, as the old song has it, with a wet sheet and a flowing sail, for the rock-bound shores of Nova Scotia and New Brunswick, for once there, right hospitable would they find their welcome, and their sport right royal."

#### Species 4.—*Salmo salar*—The Salmon.

The noble salmon, which honest Izaak Walton justly calls "the king of fresh water fish," is so well known in the North American Colonies as to need no description.

As in Europe, so in America, it is agreed that there is but one species—*salmo salar*—THE Salmon. And so also is it agreed, that the salmon of Europe and that of America, are precisely similar; the same fish identically.

The salmon enters the rivers of Nova Scotia during the latter part of April. Those rivers of New Brunswick which fall into the Bay of Fundy, the salmon enters at the latter part of May ; while it seldom enters the rivers which fall into the Gulf of Saint Lawrence, until the month of June. The female salmon first enters the rivers ; the male fish follows, about a month later than the female ; and lastly, come the grilse, or young salmon, which continue to ascend the rivers during July and August.

Salmon swim with great rapidity, shoot up the most oblique and glancing rapids with the velocity of an arrow, and frequently leap falls 10 and 12 feet in height. It is believed, that the utmost limit of perpendicular height which a salmon can attain in leaping, is 14 feet ; but their perseverance is remarkable, for although they may fail, time after time, yet after remaining quiescent for a few moments to recruit their strength, they renew their efforts, and generally succeed ; but, it is said, they sometimes kill themselves by the violence of those efforts.

In New Brunswick, the salmon seldom deposits its spawn until the middle of October. Mr. Price has observed the salmon in the Miramichi, in the act of spawning, as late as the 20th of November. The fish that have spawned, generally return to the sea before the rivers become ice-bound in December ; but many remain in the fresh water all winter, and go down to the sea at the breaking up of the ice in spring.

On one occasion, in the month of December, Mr. Price states that he saw fifteen large salmon, caught with a spear, through a hole cut in the ice which covered a creek above Boiestown.

Before entering the rivers, they live a while in the brackish water of the tide-ways, as they do also when they descend to the sea, to render the change from one to the other less abrupt, and to rid themselves of certain parasitical animals, which attach to them, when they remain long either in fresh water, or in salt, as the case may be.

The spawn is not deposited until the water is greatly below its summer temperature. Professor Agassiz stated personally to the writer, that 42° of Fahrenheit's thermometer, or 10° above the freezing point, was the temperature at which salmon usually cast their ova. It is absolutely necessary, that the water should be aerated, or highly supplied with oxygen ; hence the salmon resort to shallow, pure water, and swiftly running streams, the rapidity and frequent falls in which, impart purity and vitality, by mingling their waters with the atmosphere.

A series of interesting and carefully conducted experiments in Great Britain, have within a few years, led to a much more accurate knowledge of the habits of the salmon, than was before possessed, and corrected many erroneous impressions. It has been found, that the eggs of the salmon are hatched in

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114 days, when the temperature of the water is at 36°—in 101 days when it is at 43°—and in 90 days when it is at 45°. At the end of two months, the young fish attains the length of an inch and a quarter ; at the age of six months, it has grown to the length of three inches and a quarter.

In this state the young salmon fry are called parrs, and are readily known by their silvery scales, and by their having perpendicular bars, of a dusky gray colour, crossing the lateral line. In this state, the fry remain a whole year in the fresh water, not going down to the sea until the second spring after being hatched. As they readily take both fly and bait, great numbers are often destroyed in mere wantonness ; and it is desirable all colonists should know, that the destruction of these fry, (which from their dark cross-bars and small red spots like the young of trout, are supposed not to be the young of salmon) will inevitably destroy the run of salmon in any river, and tend, with other causes, to the extirpation of this magnificent fish. When parrs are taken in angling, they should, if uninjured, be immediately returned to the stream, and every true sportsman will carefully do so.

The growth of the parr is very slow, but when it has attained the length of 7 inches, a complete change takes place in its colour. The dark cross-bars disappear, as also the small red spots, and the fish assumes a brilliant silvery appearance. It then bears the outward semblance of what it really is, a young salmon, and is termed a salmon-smolt.

As soon as this change has taken place, the smolt evinces the most anxious desire to visit the sea ; and it is alleged, that if it is prevented doing so, by any insuperable obstacle, it will throw itself on the bank and perish. Up to this time, the growth of the young salmon has been very slow, but on reaching the sea, it is exceedingly rapid ; a smolt of six or seven ounces in weight, after two or three months absence in the sea, will return as a grilse of four or five pounds weight ; this has been proved beyond all dispute. Smolts have been taken by hundreds, marked with numbered tickets of zinc attached to their dorsal fins, then set at liberty, and recaptured in the autumn of the same year, as grilse, varying from two to eight pounds in weight. These have been released with the labels unremoved, and have been seen in the spring of the third year, returning to the sea, with weight not increased ; in the succeeding autumn, they have been once more taken, as full grown fish, from 16 to 25 pounds weight.

The microscopical researches of Dr. Knox have shown, that the food of the salmon, previous to its quitting the salt water, consists of the eggs of *echinodermata* and *crustacea*, this rich aliment giving the colour and flavour for which its flesh is so highly prized. This is sustained by the observations of Professor Agassiz, who states, that the most beautiful salmon trout are found in waters which abound in *crustacea*, direct

experiments having shown to his satisfaction, that the intensity of the red colour of their flesh depends upon the quantity of *gammarinæ* which they have devoured.

Fly-fishing for salmon, in Nova Scotia and New Brunswick, increases annually, as the various rivers become known, and the proper localities and seasons are ascertained. The two most noted rivers in Nova Scotia, are the Gold River, which flows into the Atlantic, west of Halifax, and St. Mary's River, to the eastward of that port. In New Brunswick, the best rivers are the South West Miramichi, from Boiestown upwards, and the Nepisiguit River, which flows into the Bay of Chaleur at Bathurst. It is known however, that there is good salmon fishing in several other rivers, of both Provinces; while it is believed, that there are many rivers, especially in the northern part of New Brunswick, yet untried, which if visited by experienced sportsmen, not afraid of rough work at the outset, would afford good sport, and heavy fish during the whole of every season.

#### Genus 2.—*Osmerus*.

##### Species 1.—*Osmerus viridescens*—The American Smelt.

This beautiful and savory fish abounds in New Brunswick and Nova Scotia; it is sometimes taken a foot in length, but its average size is about 5 or 6 inches.

Very soon after the rivers are freed in spring from their icy fetters, the smelts rush in to the smaller streams, in countless thousands, and are then taken with the most wasteful profusion. The popular name of smelt is given to this fish, from its peculiar smell, which resembles that of cucumbers; this is strongest when the fish is first taken, but it may be perceived by raising the gill-covers, after the fish has been some time out of the water.

On the gulf coast of New Brunswick, large quantities of the smelt are used every season as manure. At Miscou and other fishing stations in the Bay of Chaleur, it is taken in great numbers, with the seine, and used as bait for cod. The endless abundance of the smelt, causes it to be less valued as food, than it really deserves.

The smelt feeds largely on the shrimp. It bites readily at the hook, baited with a piece of any of the crustaceous animals, and affords endless sport to young anglers. They are also caught in thousands by fishing through holes cut in the ice, during winter, and are then greatly prized. The writer has frequently taken the smelt with a small scarlet fly, while fishing for sea-trout in the Gulf of Saint Lawrence, and they would undoubtedly furnish very pretty light sport, if other and nobler game did not exist in the same locality.

Genus 3.—*Mallotus*.Species 1.—*Mallotus villosus*—The Capelin.

This, the smallest species of the salmon family, inhabits the northern seas only, never ranging further south than the shores of New Brunswick. It is very nearly allied to the genus *osmerus*, from which however it differs in the smallness of its teeth, and in certain other particulars. Some naturalists have called this fish *salmo groenlandicus*, while others have classed it among the herring family. Cuvier has decided, that it belongs to the salmonidæ, to which it seems now settled it properly appertains.

The capelin is from 4 to 7 inches in length, the under jaw longer than the upper; the back and top of the head a dull leek green, with bright green and yellow reflections, when moved in the light; sides and belly covered with delicate and very bright silvery scales, which are dotted on the margins with black specks; the back covered with small smooth grains, like shagreen.

The manner in which the capelin deposits its spawn, is one of the most curious circumstances attending its natural history. The male fishes are somewhat larger than the female, and are provided with a sort of ridge, projecting on each side of their back bones, similar to the eaves of a house, in which the female capelin is deficient. The latter, on approaching the beach to deposit its spawn, is attended by two male fishes, who huddle the female between them, until the whole body is concealed under the projecting ridges, and her head only is visible. In this position, all three run together, with great swiftness, upon the sands, when the males, by some inherent imperceptible power, compress the body of the female between their own, so as to expel the spawn from an orifice near the tail. Having thus accomplished its delivery, the three capelins separate, and waddling with their whole force through the shallow water or the beach, generally succeed in regaining once more the bosom of the deep; although many fail to do so, and are cast upon the shore, especially if the surf be at all heavy.

The Rev. Mr. Anspach, in his journal on Newfoundland, thus describes the arrival of the capelin schull at Conception Bay, where he resided for some years:—

"It is impossible to conceive, much more to describe, the splendid appearance, on a beautiful moonlight night, at this time. Then, the vast surface of the Bay is completely covered with myriads of fishes, of various kinds and sizes, all actively engaged, either in pursuing or avoiding each other. The whales, alternately rising and plunging, throwing into the air spouts of water; the cod-fish, bounding above the waves, and reflecting the light of the moon from their silvery surface; the capelins, hurrying away in immense shoals, to seek a refuge on the shore, where each retiring wave leaves multitudes skipping upon the sand, an easy prey to the women and children, who stand there with barrows and buckets, ready to seize upon the precious and plentiful booty; while the fishermen in their skiffs, with nets made for that purpose, are industriously engaged in securing a sufficient quantity of this valuable bait for their fishery."

Like the common smelt, the capelin possesses the cucumber smell; but it differs from the smelt in never entering fresh water streams.

As an article of bait for cod, and other fish of that class, the capelin is of much importance; wherever abundant, the cod fishing is excellent. It has been found as far north in the arctic regions as man has yet penetrated; and it forms so important an article of food in Greenland, that it has been termed the daily bread of the natives. In Newfoundland, it is dried in large quantities, and exported to London, where it is sold principally in the oyster shops.

#### Genus 4.—*Coregonus*.

##### Species 1.—*Coregonus albus*—The White Fish.

This fish, the celebrated *attihawmeg* of the great northern lakes, so frequently described by arctic voyagers as the most delicious of all purely fresh water fishes, is found in considerable numbers in Lake Temiscouata, where many are taken every autumn by the French Canadians, who come over from the Saint Lawrence to fish for them, and call them *poisson pointu*; the English lumbermen call them "gizzard-fish." They are taken occasionally along the Madawaska River; and the writer has caught them with rod and line below the falls of that river, at its confluence with the Saint John, in the early part of summer. At these falls, the inhabitants take about forty barrels every autumn, which are cured in pickle for winter use.

The white fish abounds in all the Eagle Lakes, at the head of Fish River, a tributary of the upper Saint John, and also in the Saint Francis Lakes, at the head of that tributary. In these lakes, it is caught abundantly, every autumn, during the night, by torch-light, with dip-nets. It has not been observed in any of the lakes or rivers which discharge into the Gulf of Saint Lawrence, nor yet in any of the waters of Nova Scotia.

Some years since, this fish was abundant in the Grand Lake, where the writer in the month of May, saw great numbers taken out of gill-nets set for gaspereau, and thrown away by the fishermen as worthless. At the same time the writer caught a number of them, with rod and line, in one of those small pieces of water connected with the Grand Lake, usually called "key-holes." It is occasionally taken in the Saint John, throughout its whole extent; in the Harbour of Saint John, in spring, it has been often caught in the seines and weirs, with the gaspereau, and salted with that fish, from the want of knowledge of its worth. James Brittain, Esquire, of the Nerepis, states, that he takes a number of white fish every season, in his salmon nets, at the mouth of that river—and that they enter it, in large shoals, every season, at the end of March, or early in April, he having seen them through the ice.

In June, 1851, several very fine white fish, weighing nearly three pounds each, were caught in a gill-net, in Darling's Lake, near Hampton Ferry.

It is very probable, that the fish of this species found in the lower part of the Saint John, have ventured out of the great lakes, at the sources of its upper tributaries, and been swept over the Grand Falls, by some extraordinary flood; once over those falls, there is no possibility of return.

The white fish seen by the writer have seldom exceeded a pound and a half in weight; but they are taken in Lake Temiscouata of the weight of three pounds, and even more. It is an inhabitant of all the interior lakes of America, from Lake Erie to the Arctic Sea; several Indian tribes mainly subsist upon it, and it forms the principal food at many of the fur posts, for eight or nine months of the year, the supply of other articles of diet being scanty and casual. Its usual weight in the northern regions is from two to three pounds, but it has been taken in the clear, deep, and cold waters of Lake Huron, of the weight of thirteen pounds. The largest seen in the vicinity of Hudson's Bay, weighed between 4 and 5 lbs., measured 20 inches in length, and 4 in depth. One of 7 lbs. weight, caught in Lake Huron, was 27 inches long.

Very recently, the writer had an opportunity of seeing some fresh specimens of the white fish of Lake Erie, and was perfectly satisfied of their identity with the "gizzard-fish" of the Saint John, and Lake Temiscouata.

During the summer, the white fish is not seen in Lake Temiscouata, and it is then supposed to retire to the depths of that unusually deep and cold lake. In October, it draws near the shores, and ascends the Tuladi River, for the purpose of spawning. It ascends the river during the night, and having deposited its spawn, returns as quickly as possible to the lake. It is when this fish draws near the shore, prior to spawning, that the fishery is carried on, chiefly at a little bay in Lake Temiscouata, into which the Tuladi discharges its waters. At the same time, the great grey trout (*salmo ferox*) follows the white fish to the shore, and preys upon it. While the nets are set for white fish, the fishers, with torch and spear, attack and capture the *salmo ferox*, frequently of large size; and hence this latter fish has acquired the name of "tuladi," from the river to which it is attracted by its favourite prey.

The white fish feeds largely on fresh water shell-fish, and shelly mollusca; its stomach thereby gains an extraordinary thickness, and resembles the gizzard of a fowl, hence its popular name of "gizzard-fish." The stomach, when cleaned and boiled, is a favourite morsel with the Canadian voyageurs.

#### Family 4.—CLUPEIDÆ.

##### Genus 1.—*Clupea*.

##### Species 1.—*Clupea elongata*—Common American Herring.

As the herring of North America has been found to differ greatly from the herring of Europe, (*clupea harengus*,) the



naturalists of the United States have distinguished it by the name of *clupea elongata*. Fishermen designate it by the name of "blue-back," and sometimes they call it the "English herring;" very often, they add the name of the locality where it is taken, to distinguish particular varieties.

The statements made by the older naturalists, as to vast armies of herrings coming down annually from the Arctic Ocean, and making the circuit of the seas, is now supposed to be wholly imaginary. It is generally believed, at present, that the herring fattens in the depths of the ocean, and approaches the shore in shoals, merely for the purpose of depositing its spawn. In this opinion, Mr. Yarrell fully coincides, and there can scarcely be a better authority. It is quite certain, that the common herring is caught on the shores of New Brunswick during every month of the year, which quite precludes the idea of its being a migratory fish.

It is found everywhere on the coast of Nova Scotia; and from the information obtained by the writer during his official inspection of the fisheries, it appears certain, that there are several varieties of the common herring, some of which spawn early in the spring, and others in August and September; also, that the quality varies very considerably in different localities. The habits, haunts and seasons of this fish are only beginning to be understood, and accurate observations on these, would be highly useful to all who are interested in the herring fishery.

#### Species 2.—*Clupea minima*—The Britt.

Dr. Storer, in his Report on the Fishes of Massachusetts, says that this pretty little specimen of herring is found, at certain seasons, in incredible numbers, on the coast of that State, and serves as food for several other species of fish. It varies in length, from one to four inches; the back, nearly black; the upper parts of the sides, dark green; sides silvery, with roseate and golden reflections.

The fishermen of the Bay of Fundy speak of this fish, as having been formerly very abundant, but now seen only occasionally. As the writer has not been fortunate enough to see a specimen, he cannot describe it from his own observation. It is said to be frequently met with in the Gulf of Saint Lawrence.

#### Genus 2.—*Alosa*—The Shad.

##### Species 1.—*Alosa sapidissima*—The American Shad.

The shad of America, like the common herring, having been found to differ materially from the shad of Europe, has received a distinct name; the designation given by Wilson, and adopted by Dr. Storer, *alosa sapidissima*, is here followed.

Unlike most fish which frequent the northern seas, this species comes from the south to deposit its spawn. Dr. DeKay,

in his Report on the Fishes of New York, says he infers this to be the fact, from the order of its appearance along the American coast. At Charleston, shad appear in January ; at Norfolk, in February ; on the coast of New York, at the latter end of March, or beginning of April ; at Boston, in the latter part of April. In the Bay of Fundy, they seldom appear until the middle of May. The first fish which arrive, ascend the River Saint John to spawn ; it is believed, that they remain in the fresh water no longer than is necessary to deposit their ova, and then proceed up the Bay of Fundy, to their favourite feeding grounds, there to fatten upon the shrimp and "shad-worm," until they attain that degree of excellence which renders them so much sought after. The other shad, which are found in the autumn upon the same feeding grounds, and in which no roe has yet been seen, are probably fish that have not attained a sufficient age for spawning, as those which ascend the river for that purpose, are of large size and apparently old fish.

The body of this fish is deep and compressed ; its length varies from one to two feet. The width across the body, from the commencement of the dorsal fin, to the anal, is nearly equal to one-fifth the length of the fish. Abdominal ridge serrated throughout ; the whole body covered with large deciduous scales, except the head, which is naked. The usual weight of this fish is from one to four pounds, although it sometimes attains the weight of six pounds.

Mr. Herbert (Frank Forrester) in his "Fish and Fishing," speaking of the shad, says :—

"This delicious and well known fish, which is by many esteemed the queen of all fishes on the table, has been, until very recently, regarded as one that could be taken only with the net, and therefore of no avail to the angler. It is now, however, clearly proved, that like the herring, the American shad will take a large gaudy fly freely, and being a strong, active, and powerful fish, affords great play to the sportsman.

"It is indisputably true, that on his entrance into fresh water from the salt, for the purpose of spawning, the shad will readily take a gaudy fly, the more readily the higher he runs up into the cold and highly aerated waters, in the upper parts of our large rivers.

"The flesh of the shad is, perhaps, the most delicate of any existing fish ; and, though it lacks the lusciousness, as well as the glutinous fin of the turbot, it is preferred to that fish by many judicious epicures, notwithstanding the drawback occasioned by its innumerable and sharply-pointed bones.

"From personal experience and success, I can assure the fly-fisher, that he will find much sport in fishing for the shad, during his upward run in the spring, with a powerful trout-rod, a long line, and the proper flies."

Of the sea shad, none are so fine as those taken at the head of the Bay of Fundy, in the muddy waters of which they attain the highest perfection, owing to the great abundance there of their favourite food, the "shad-worm" and the shrimp. The shad is but rarely seen on the Atlantic coast of Nova Scotia ; it is found in the Gulf of Saint Lawrence, the various rivers of which it ascends, as far north as the Miramichi, which seems to be its limit in that direction, none having been seen in the Bay of Chaleur.

The shad enters the Miramichi in the latter part of May, and remains until the middle of July ; occasionally it ascends the South West as far as Boiestown, but the greatest numbers

are found below the mouth of Etienne's River, always resting in deep, quiet water. The shad which frequent the Gulf are greatly inferior to those taken in the Bay of Fundy.

The shad which ascend the Saint John, resort for spawning to Darling's Lake, (Kennebecasis,) Douglas Lake, (Nerepis,) the Washademoac Lake, the Ocnabog Lake, the Grand Lake, and the Oromocto River. They are caught in the Saint John near Fredericton, but not above, the water being too rapid. The shad taken in the fresh water, are very inferior to those which remain exclusively in the salt water of the Bay, and the longer they are in the river, the more worthless they become.

Species 2.—*Alosa tyrannus*—The Gaspereau, or American Alewife.

The alewife appears in great quantities in the Chesapeake, in March; at New York, it appears with the shad. The earliest fish appear in the Harbour of Saint John, in April, but the main body does not enter the river before the 10th of May. It would therefore appear, that the alewife also comes from the south, like the common shad, to deposit its spawn in northern rivers.

The usual length of this species of shad, which is best known in New Brunswick and Nova Scotia by the name of gaspereau, is from 8 to 10 inches; the back a blue green, approaching to purple; sides, silvery. The head, dark green above, and the tip of the lower jaw of the same colour; opercles, yellow.

In the Bay of Fundy, this fish is abundant; in the Gulf of Saint Lawrence, it is less plentiful, and of much smaller size; in the Bay of Chaleur, it has not yet been noticed, and like the shad, the Bay of Miramichi would seem to be its extreme northern limit.

The catch of gaspereau in the Harbour of Saint John, varies from 12,000 to 16,000 barrels each season, and sometimes reaches 20,000 barrels. It ascends the Saint John to the same localities as the shad, in order to deposit its spawn. In the Miramichi, it ascends to the source, and spawns in the Miramichi Lake.

Species 3.—*Alosa menhaden*—The Mossbonker.

This fish is known by a variety of popular names, among which are "hony-fish"—"hard-head"—"pauhagen"—and "menhaden." It is seldom eaten, being dry, without flavour, and full of bones. On the coast of the United States, it is used as bait for cod, and also extensively as manure, for renovating old grass fields, but not without injury to the health of those who reside in the vicinity. The mossbonker is sometimes caught in the weirs, within the Harbour of Saint John, in considerable numbers; it has occasionally been sold to the

ignorant as fall shad, to which it bears some resemblance. The mossbonker is exclusively a sea fish, never entering the fresh water.

Species 4.—*Alosa mallowaca*—The Autumnal Herring.

Dr. DeKay says the autumnal, or fall herring, or "shad herring," is a common fish at New York; he has adopted the designation of that excellent naturalist Dr. Mitchell, who having first observed this fish at Long Island, near New York, conferred upon it the aboriginal name of the Island—*Mallowaka*.

A careful examination has been made of the "Quoddy herring," taken near Campo Bello, and it has been found to correspond so exactly with the description given by Dr. DeKay, that the writer, until better informed, ventures to class it as a member of the shad family. In flavour and excellence, it ranks only second to the best shad of the Petitcodiac. It is exclusively a sea fish.

All the members of the shad family are serrated, or toothed like a saw, on the belly, which is carinate, or shaped like a keel.

ORDER 3.—Fishes with ventrals under the pectorals, and the pelvis suspended to the shoulder bones.

Family 1.—GADIDÆ.

This family is one of the most important to man in the whole class of fishes.

Genus 1.—*Morrhua*—The Cod.

Species 1.—*Morrhua vulgaris*—The common Cod.

Species 2.—*Morrhua Americana*—The American Cod.

The first of these two species is the common cod of Newfoundland, well known as an article of food, the wide world over. Among fishermen, it is designated the bank cod; it is taken in deep water off the coast of Nova Scotia, and also in the entrance to the Bay of Fundy, between Brier Island and Grand Manan. It is always a thick, well-fed fish, and often attains a great weight, sometimes 70 or 80 pounds, and even more. The colour varies much in individuals, but is generally a greenish brown, fading into ash colour when the fish is dead, with many reddish yellow spots; the belly, silvery opaque white; the fins, pale green; the lateral line, dead white.

This fish is taken from the coast of Maine northwardly, as far as man has penetrated. Captain James C. Ross states, that on the west coast of Greenland, in latitude 66° 30' north, a number of very fine codfish were caught by the crew of the "Victory," on a bank consisting of small stones, coarse sand,

and broken shells, with 18 to 30 fathoms over it. At the Peninsula of Boothia, Captain Ross purchased cod from the Esquimaux, who caught them through holes in the ice.

The Commissioners of British Fisheries, in their Report to Parliament for the year 1846, state that two vessels in that year, proceeded for the first time, from the Shetland Islands to Davis' Straits, for the prosecution of the cod fishery, and were very successful, the number of fish taken having been 29,403 cod. The fish were caught in the ordinary manner, with hand-lines and bait. So plenty were they in some places not far from the shore, that they were caught with *raspers*, or by letting down and drawing up a line with several bare hooks fixed thereon, tied back to back. The fish were, however, chiefly caught upon a bank, with a depth of water from 15 to 40 fathoms, in latitude 66° and 67° north, and 55° west longitude, from 30 to 40 miles off the land. The codfish were in so great abundance, that nearly 2000 fish were caught by the 20 men on board, in the course of 24 hours; the whole quantity was fished in 28 days, being an average daily catch of 1000 fish. Some of the fish, when taken out of the sea, weighed about 80lbs., and when dressed, about 60lbs. They were of excellent quality, and their livers were so rich, that they were preserved, with the firm conviction they would produce six tons of oil. In 1847, another successful attempt was made by a vessel from Lerwick, to prosecute the cod fishing at Davis' Straits. The vessel reached the fishing ground on the 23d of June, and continued to fish until the 16th of August, during which time 42,143 cod were caught. This was considerably above the take of the previous year, and but for stormy weather, the voyage would have been even more successful.

In September 1851, the writer saw in the fish market of Halifax, a bank cod weighing 55lbs. It was a female fish, not in good condition, having nearly finished spawning. The fishermen stated, that it was taken off Halifax Harbour, about ten miles from land, in four fathoms water, on a bank to which the cod resort for spawning in August and September. The largest cod of this species brought into Halifax market, during the season of 1851, weighed 86lbs.

The second species named above, the American cod, is slightly, though permanently, distinct from the common or bank cod. The back is of a light olive green, (becoming pale ash in the dead specimens) covered with numerous reddish or yellowish spots, to a short distance below the lateral line, which is an opaque white throughout its whole extent.

There are several varieties of the American cod, the most usual of which are the *arenosus*, or shoal cod of Dr. Mitchell, with a greenish brown hue, and inconspicuous spots; and the *rupestris*, or rock cod of the same author, of a smaller size, with a reddish hue, occasionally a bright red, very numerous

on the whole coast of Nova Scotia, and in the vicinity of Grand Manan. Fine specimens of this variety may be seen in the fish market of Halifax, during the season; their quality is admirable.

The southern limit of the American cod is New York; thence it ranges northwardly, along the whole coast of North America, to the Saint Lawrence.

It is believed, that there are several species and varieties of cod, within the Gulf of Saint Lawrence, and especially on the coast of Labrador; but these have not yet been examined with precision. In the Gulf, deformed fish are of common occurrence, the deformity frequently consisting in a fore-shortening of the head, whence the fishermen call them "bull-dogs."

The cod is an exceedingly voracious fish. It attacks indiscriminately every thing in its way, devouring smaller fish, crustacea, and marine shell-fish. Its stomach is the great repository, from which naturalists have lately obtained so many rare and undescribed species of shells, inhabiting deep water, and which are unattainable by any other means.

A fisherman at Brier Island assured the writer, that he had often seen the cod in shoal water, with their heads straight down and tails up, working mussels and clams off the bottom.

#### Species 3.—*Morrhua pruinosa*—The Tomcod.

This fish ranges the whole American coast, from New York northwardly; it is taken on the shores of Nova Scotia and New Brunswick, throughout the year. It frequently ascends rivers, even into fresh water.

The head is small, and flattened above; the abdomen prominent; the tail long and slender; the cheeks lustrous. It varies in length from 4 to 12 inches. The colours of the tomcod vary greatly, scarcely any two individuals being exactly alike; five varieties have been noticed, and it is thought the number may be still further increased. It is a savory fish, and may be taken in large quantities with the greatest ease. As it seizes almost any bait greedily, it is a great source of amusement to juvenile anglers everywhere.

In the early part of winter, after the first severe frost, it becomes very abundant in the mixed waters of estuaries, and hence the name of "frost-fish" which is frequently applied to it. At that season, it is in fine condition, and is consumed in large quantities. Dr. Storer states, that no less than 2000 bushels of this fish, are sent annually from Watertown alone, to the Boston market, and there meet a ready sale.

#### Species 4.—*Morrhua aglefinus*—The Haddock.

This fish is found everywhere on the American coast, north of New York. Its distinctive colouring is blackish brown above, and silvery gray below the lateral line, which is jet black. The

back and sides are varied by purplish and gold gleams, which disappear very soon after the fish is dead. The body of the fish is stout forward, and tapering backward; the head large and arched; the eyes large; the lower jaw the shortest.

This is an exceedingly fine fish when eaten fresh, or when slightly salted and smoked, in the same manner as the Finnan haddocks of Scotland. It is too thin a fish for salting and drying like the cod, and has only half the commercial value.

The haddock spawns early in spring, and the young are said to be six inches long in September. Their food is small fish, crustacea, and almost any of the inferior animals of the deep, even the spiny aphrodita. They are in best condition for table in the latter part of the season.

Haddocks swim in immense shoals, and are prone to change their ground after having arrived. When their numbers are considered, the consumption of food, even in a short space of time, must be enormous; and this may be one powerful reason for their seeking new localities.

The haddock is a favorite object of pursuit, with those who follow deep-sea fishing as an amusement. Haddock fishing may be pursued with the greatest comfort and convenience, by the amateur fisherman, in Quoddy River, between Campo Bello and Eastport—in the Basin of Annapolis, near Digby—and in the Harbour of Halifax. In each of those localities, the fish are of excellent quality, and most abundant.

After describing the usual tackle for this fishing, Frank Forrester says—"With this, in any eastern water, you may rest assured of returning home with a boat-load of fish, a set of very weary limbs, a pair of very sore hands, and an enormous appetite, of which, *me judice*, the first and last alone are desirable."

#### Genus 2.—*Phycis*.

##### Species 1.—*Phycis Americanus*—The American Hake.

The geographical range of this fish appears to be from Cape Cod, northwardly. It is taken largely on muddy bottoms, both in the Bay of Fundy and in the Gulf of Saint Lawrence, chiefly by fishing during the night, at which time it feeds on the smaller crustacea, with which its stomach is generally found to be filled. In the Gulf of Saint Lawrence, and Bay of Chaleur, it is invariably called "ling," under which name, when salted and dried, it is exported by the Jersey merchants, who have fishing establishments there, and who probably introduced the name.

This fish is frequently taken of the length of three feet, especially in the Gulf; it is of a reddish brown colour, with slight metallic reflections on the cheeks, and a dark patch beneath the orbits; abdomen lighter, mixed with gray. It has one barbule under the chin; the ventral fins are simple rays, divided or forked, one of the divisions longer than the other.

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Head pointed, flattened above; snout prominent; the upper jaw projects beyond the lower; both jaws are arched with several rows of sharp, incurved teeth, which render necessary an armature of six or eight inches above the hook, as this fish readily bites off a common cod-line.

Genus 3.—*Merlucius*.

Species 1.—*Merlucius albidus*—The Silver Hake.

This fish has the same geographical range as the American hake last mentioned. It is abundant around the Island of Grand Manan, and is there known as the silver hake; in the market of Saint John, it is sold under the name of "whiting."

When quite fresh, it is an exceedingly sweet and palatable fish, but it soon becomes soft and tasteless. As it is never salted, the fishermen attach no value to it whatever. At Grand Manan, the silver hake, of small size, is often taken in the herring nets, in which it becomes entangled while pursuing its prey. The writer observed the fishermen at Grand Manan throwing away this fine fish by dozens, when clearing their herring nets. It is a most voracious fish, as implied by its name, *merlucius*—the sea pike.

The head and upper part of the body are of a dull lead colour; the sides and abdomen white. The eyes are very large, the pupils black, the irides silvery. There is a sensible depression on the top of the head between the eyes. The lower jaw is the longest; both jaws are armed with ill-defined series of very sharp recurved teeth, some of which resemble the fangs of serpents; these long fang-like teeth are distant, the intervals being filled up with smaller teeth.

This fish is from one to two feet in length, and is of roving habits, following the shoals of herrings, of which it devours great quantities. It has been generally confounded with *merlucius vulgaris*, the common hake of Europe, but Dr. DeKay considers it distinct by its radial formula, long palatine teeth, deeply concave caudal, and other particulars; he, therefore, confers upon the American species the name of *albidus*.

Genus 4.—*Merlangus*.

Species 1.—*Merlangus carbonarius*—The Coal-fish or Pollack.

According to Dr. DeKay, this is one of the few oceanic fishes which range on both sides the Atlantic. It is a northern fish, and the coast of New York is assigned as its southern limit, on this side the Atlantic. It is found far to the north, and was the only fish met with by Lord Mulgrave on the shores of Spitzbergen; the fry, only 4 or 5 inches in length, were caught with the trawl net on the west coast of Davis' Straits, during the first voyage of Captain Sir Edward Parry.

The writer has not seen in the Gulf of Saint Lawrence a single specimen of this fish; nor has he ever met a fisherman who had taken one within the Gulf, except near the northern end of the Strait of Canso. In the Bay of Fundy, the pollack abounds almost everywhere, except in the muddy waters of Cumberland Bay, and the Basin of Mines.

The head and body of this fish are elegantly shaped; from its beauty of form, and quickness of motion, the Bay of Fundy fishermen often call it the "sea-salmon."

The upper part of the head, and the back above the lateral line, are almost black; beneath that line, (which is silvery white) the fish is much lighter in colour, becoming greyish white, with golden reflections on the sides and belly; the head tapers to the snout; the upper jaw rather the shortest; the mouth black; the teeth very small.

From almost every projecting point in the Bay of Passamaquoddy, where there is a run of tide, young pollack may be taken during the summer, with rod and line, very rapidly, either with bait, or any gaudy artificial fly, even of rude construction. The most attractive is the scarlet ibis with gold, the same as used in the Gulf for white sea-trout.

The season for spawning is early in spring; in the early part of summer, the fish is lank and almost worthless. It becomes in good condition in August, and improves as the season advances; it then prowls after prey in large companies. It swims at no great depth, and when attracted by bait, will keep near a boat or vessel until all are taken.

Pollack fishing may be considered the most valuable and extensive of the deep-sea fisheries of the Bay of Fundy.

#### Genus 5.—*Brosmius*.

##### Species 1.—*Brosmius vulgaris*—The Torsk, 'Tusk, or Cusk.

This is a northern fish, and its southern limit on the North American coast, is Massachusetts Bay; even in the Bay of Fundy it is not very abundant. It is taken in deep water while fishing for cod, and is said to prefer a rocky bottom on which sea-weed grows. Its usual length is from 18 inches to 3 feet, which it rarely exceeds.

The colour of the body is a uniform dark slate, the head rather darker than the body. The mouth large, the jaws filled with large, recurved teeth; the upper jaw is a very little longer than the lower; a single barbule under the chin. The dorsal fin begins well forward on the fish, and terminates just in front of the tail; the anal fin is continued to the tail and nearly joins it. The caudal fin is round, and like the dorsal and anal fins, is margined with blue and edged with white. This latter peculiarity renders the torsk, or cusk, easily distinguished among all other members of the cod family.

Dr. Storer is of opinion, that the torsk of America cannot be distinguished from the torsk of Europe, although LeSueur conceives there is a difference, and designates the American species *B. flavescens*. In Europe this fish rarely appears below 60°, or above 73°, north latitude. It is plentiful on the coast of Norway, as far as Finmark, and also on the west and south coast of Iceland, but rare on its north and east coast.

The fish of this species taken in the Bay of Fundy, are usually caught in the latter part of winter, or early spring. When eaten fresh, it is very fine, but rather tough; it is therefore generally preferred after being dried. It then swells much in boiling, and parts into very thick flakes. In Boston, this fish is considered a delicacy, and when dried, is by many thought preferable to cod.

#### Genus 6.—*Lota*.

Species 1.—*Lota maculosa*—The Spotted Burbot, or Fresh-water Cusk.

This is the only member of the cod family which resides permanently in fresh water. Some hundreds are taken annually in the River Saint John, by night-lines dropped through the ice, at the beginning of winter. Many are thus taken near Fredericton, but the best fishing ground is on the sand-bars, a little above the mouth of the Oromocto River, where this fish resorts previous to its spawning, which takes place in February or March.

The length of the fresh-water cusk, is from 18 inches to 2 feet. The body is compressed, and somewhat eel-shaped; the head broad, depressed; jaws nearly equal; the gape large. The teeth are in the jaws, small and recurved, distributed in bands. The colour of the body is a yellowish brown, clouded and spotted with darker brown spots, and it is covered with a mucous secretion. The fins partake of the colour of that part of the body from which they emanate, those of the lower surface being much the lightest.

In July, 1841, the writer caught one of this species of fish on a night-line in Lake Temiscuata, which weighed seven pounds. It is abundant in that lake, and also in the Eagle and Saint Francis Lakes already mentioned, in common with the "white-fish," and "great grey trout."

Dr. Richardson (*Fauna Boreali Americana*) says it is common in every river and lake, from Canada to the northern extremity of this Continent. The Cree Indians call it the "methy;" the Canadian voyageurs name it "la loche," and by these two names it is known in the fur countries. Within the limits of the United States, it is called the "eel-pout." It is very voracious, feeding on smaller fish, and cray-fish; these last abound in Lake Temiscuata. Dr. Richardson says he opened several of these fish taken at Pine Island Lake, in the

month of March, which were filled with cray-fish to such a degree, that the form of their bodies was quite distorted, the soft integuments of their bellies admitting of great dilatation.

The flesh of the "fresh-water cusk," is white, firm, and of good flavour; the liver and roe are considered delicacies. When well bruised and mixed with a little flour, the roe can be baked into very good biscuits, which are used in the fur countries as tea bread.

This fish is not unlike the eel in many of its habits, concealing itself under stones, waiting and watching for its prey; it feeds principally at night, and is therefore generally taken by night-lines.

### Family 2.—PLEURONECTIDÆ—The Family of Flounders.

#### POPULARLY CALLED FLAT-FISH.

The peculiarities of this family are thus described:—"Body flat, compressed vertically; upper surface dusky, and of various colours; beneath, white; dorsal single, extending the whole length of the back; both eyes placed on the same side of the head; no air-bladder; branchial rays, six."

With such peculiar characteristics, the members of this family are readily recognized everywhere. In some of the members, the eyes are placed on a different side from their usual situation, and these are termed, *reversed* individuals; more rarely it happens, that both sides are coloured, when they are said to be *doubled*. As some confusion has arisen, as to whether a fish is right or left, *dextral* or *sinistral*, the following is the rule adopted. The fish is placed on its edge with the tail to the observer, and the dorsal fin uppermost; the fish is then said to be *dextral* or *sinistral*, according as the coloured side is on the right, or left hand.

All the fishes of this family are very tenacious of life.

#### Genus 1.—*Hippoglossus*.

##### Species 1.—*Hippoglossus vulgaris*—The Halibut.

This is a very large fish; it is found on the coast of North America, from Nantucket to Greenland; and is frequently taken of the weight of 200lbs. Dr. Storer mentions one of these fish brought into Boston market, that weighed 420lbs. after the head and bowels were removed; and another, that weighed upwards of 600lbs., which was taken on a bank, sixty miles south east of Portland, Maine.

The halibut is very voracious; it swims near the ground, and devours other flat-fish, as well as shells and crustacea. In summer, it is caught in shallow water, and often quite near the shore; in winter it retires to deep water. The flesh is rather coarse and dry, but it is much esteemed by many; the fins and flaps are delicacies, if the fish is in good condition.

When the fishermen of the Bay of Fundy take a number of these fish at one time, they salt the flesh lightly, and then dry and smoke it for winter use.

On some parts of the coast of Nova Scotia, this fish is found in such abundance, and of so large size, that the localities are avoided by those engaged in cod-fishing, as a boat, or small vessel, becomes soon heavy laden.

Both eyes, and the colour of the halibut, are on the right side; but Dr. Storer mentions, that reversed specimens are sometimes met with, and says he examined a fish of this species, in Boston market, weighing 103lbs., with the left side coloured, and bearing the eyes.

### Genus 2.—*Platessa*.

Species 1.—*Platessa plana*—The common Flounder.

2.—*Platessa pusilla*—The Sand-flounder, or small dab.

3.—*Platessa limanda*—The Fleuk, or common dab.

These several species of flat-fish are found everywhere on the coasts of New Brunswick and Nova Scotia; very likely, other species exists, and will be hereafter noticed.

The first, or common flounder, is from 6 to 18 inches in length; the eyes and coloured surface are on the right. The colour is variable; some are greenish, others slate-coloured, but generally, rusty-brown prevails. In Boston, this fish is called the "winter flounder," and its flesh is highly prized. In the tide-way of the Miramichi, this fish is taken with the hook, during winter, through holes cut in the ice.

The next species, the sand-flounder, or small dab, is a little fish, from 4 to 6 inches in length, nearly of a uniform olive brown; the eyes and coloured surface on the right; found in shallow and sandy bays and coves. It is very abundant during summer, on the sands to the eastward of the City of Saint John, and is taken at low water by hundreds, in the shallow pools of the estuary of the Marsh Creek. The shrimp-fishers on those sands, also take them in great numbers in their shrimp-nets.

The third species, the fleuk, or common dab, as it is called in Scotland, also abounds. It is generally taken towards autumn, when it approaches the shores prior to spawning. Several of this species were taken by the writer in October, 1850, in the upper part of the Bay of Fundy, near Parrsborough; it was found a very sweet and delicate fish, eaten fresh. It is readily distinguished from the common flounder, by its more uniform and lighter brown colour, its more curved lateral line, and the greater roughness of the scaly surface. The eyes and colour are on the right side; it is from 8 to 12 inches in length.

Another small flat-fish was observed by the writer, at Point Miscou, in August 1849, where it was taken in a smelt-seine,

the smelt being used there as bait for cod. It had several of the characteristics of the European plaice ; but as it was evidently the young of a larger fish, no decided opinion could be formed.

Family 3.—CYCLOPTERIDÆ—The Lump-fish Family.

Genus 1.—*Lumpus*—The Lump-fish.

Species 1.—*Lumpus vulgaris*—The common Lump-fish.

This fish is characterized by the ventrals being united in a disc, or cup-shaped form. The body is deep and rough, with bony tubercles ; it is soft and flaccid, resembling a lump of jelly. By means of its cup-shaped ventrals, it adheres so firmly to any solid substance, as to be removed with difficulty.

The lump-fish varies in length from 10 to 20 inches. It is a native of the northern seas, being found abundantly on the coast of Greenland. The coast of New York is the most southern limit in which it has yet been observed. On the coast of Massachusetts Bay, it is frequently taken, from 3lbs. to 15lbs. weight, but there it is never used as food. Dr. Storer says the specimens taken there, are of a bluish slate-colour on all the upper part of the body, the under part yellowish. The whole appearance of this fish, he says, is very forbidding ; the younger specimens being a soft, gelatinous mass, the older, much firmer, but both covered with firm, horny spines.

This fish has been frequently noticed in the vicinity of Grand Manan, attached to, or immediately beneath, large masses of floating sea-weed. Small specimens are frequently taken in the weirs, within the Harbour of St. John, which the fishermen throw away as worthless.

In the spring, the lump-fish approaches the shores to deposit its spawn ; it is then taken in considerable numbers near the Harbour of Halifax, the largest weighing about five pounds. They are taken there of two different colours ; the one variety being of a dark blue, approaching to black, and the other quite red. Those of a red colour only, are used as food ; they are considered good by many, although very fat, and somewhat oily. The dark-coloured variety is considered very inferior, and is not eaten.

Mr. Yarrell notices this difference in colour in the lump-fish, and also in the quality of its flesh, which he says is only the effect of season ; the fine external colour, and the firmness of the flesh, being lost for a time by the exhausting process of spawning. When dark-coloured, the fishermen designate it the "worthless blue-lump."

The North American lump-fish (or lump-sucker as it is sometimes termed) is considered identical with the like fish, caught on the shores of Great Britain. It feeds principally on young fish, of which it devours great quantities.

## ORDER 4.—Apodal, without ventral fins.

## Family 1.—ANGUILLIDÆ—The Eel Family.

Genus 1.—*Anguilla*—The Eel.Species 1.—*Anguilla vulgaris*—The common Eel.

The eel inhabits both fresh and salt water, and is taken in every situation in these Colonies which it can reach. Its colour is greenish olive above, yellow beneath; this colour extending along the base of the anal fin, nearly to the end of the tail. It is caught in a variety of ways; but taking the eel with hook and line, is considered much too tedious and troublesome. In summer, it is caught in long round Indian baskets, called eel-pots; it is also taken by torch-light, with the spear. In winter it is taken through holes in the ice, by spearing it in the mud, where it then lies torpid. The places where this fishing takes place are generally well known, and are termed "eel-grounds."

It is very voracious, feeding on aquatic insects, small fishes, and all dead animal substances that come in its way. The structure of its branchial pouches enables it to live out of water for a long time; and as it can move along the ground, it is not uncommon to find the eel shifting its quarters from one creek or lake to another, by crawling through the grass.

The common eel, when in good condition, is a very excellent, well-flavoured fish. It varies greatly in size, being taken from 6 inches to 2 feet or more in length.

Dr. DeKay says he has examined the "silver eel," so called, and considers it only a variety of the common eel. Its general colour is silvery gray, darker above, and a clear white belly shining like satin.

Species 2.—*Anguilla oceanica*—The Sea Eel.

Dr. DeKay gives this name to a sea eel found on the coast of New York, which the writer has also noticed in the Gulf of Saint Lawrence. It is described as brownish on the back; pale on the sides; beneath, smutty white; fins tipped with bluish white, or pale blue. It was first observed in June 1842, at Lennox Island in Richmond Bay, on the north side of Prince Edward Island. The Indians had there taken several with torch and spear, which were three feet in length. A specimen was also shown to the writer at Pokemouche, (north of the Miramichi,) in October 1849, by a Micmac Indian, who had split, salted, and smoked it. In that state, without the head, it was about the size of an ordinary smoked salmon, and fully as thick; it was taken in Pokemouche Gully, by torch-light, with a basse spear.

The Micmacs say, that this eel is exceedingly shy, and cannot be induced by any means to enter an eel-pot. Those seen by



the writer were excessively fat, the flesh very white, and exceedingly well flavoured.

The sea eel, described by Dr. DeKay, is stated to be fifty inches in length, and weighing nine pounds. It is probably found along the whole North American coast, north of New York.

### Genus 2.—*Ammodytes*.

Species 1.—*Ammodytes Americanus*—The American Sand-launce.

The usual length of this fish is from 6 to 12 inches. The head and body above, bluish brown, intermixed with silvery and light green; beneath this, the sides and abdomen are silvery—the whole fish has a beautifully brilliant appearance. It is a northern fish, but its geographical range extends as far south as New York.

It is found everywhere on the coasts of New Brunswick and Nova Scotia, chiefly on beaches, under stones. At Newfoundland, and on the coast of Labrador, the sand-launce is used largely as bait for cod. On several parts of the coast of Great Britain and Ireland, this fish is readily eaten by the poorer classes; but as more palatable species are easily obtained in America, they are allowed to collect on the shores in large quantities, to be devoured by their numerous enemies; the cuttle-fish (*sepia arctica*) is said to prey upon them voraciously.

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## GROUP II.—CARTILAGINOUS FISHES.

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### ORDER 1.—Fishes with free gills.

Family 1.—STURIONIDÆ—The Sturgeon Family.

### Genus 1.—*Accipenser*.

Species 1.—*Accipenser oxyrinchus*—Sharp-nosed Sturgeon.

This fish is taken in New Brunswick and Nova Scotia from 2 to 8 feet in length. The body is pentagonal; the skin rough; the head flattened above, and slightly depressed between the eyes. The whole upper portion of the head, bony; the head elongated, spatuliform, and covered with strong, bony shields, roughened above and beneath. The upper part of the body is of a grayish brown colour; inferior portion of the sides, silvery; beneath, white.

This fish ascends the River Saint John in considerable numbers in May, and is then often taken in the Harbour of Saint John, of the length of six feet or more, in weirs, seines, and

gaspereau nets, to which last it is very destructive. In the summer, it basks on the Oromocto shoals, about 70 miles from the sea; during very hot days, some one of these monsters may be seen, every few minutes, flinging its whole length into the air, apparently in mere wantonness, but probably to disengage itself from the lamprey eel, which fastens upon its belly and eats into the flesh. Instances have occurred of the sturgeon having leaped into a canoe, in its efforts to disengage itself from several lampreys, that had fastened upon it, at the same time.

This fish also basks on an extensive sandy shoal to the southward of Grand Point, in the Grand Lake, about 60 miles from the sea. The Micicte Indians who formerly encamped in that vicinity, were accustomed to take sturgeon, on this shoal, after their own fashion. They used a harpoon of iron, with two barbs, both on the same side, the one about two inches above the other; this was attached to a wooden handle, or pole, of 10 or 12 feet in length. One Indian paddled the canoe, in that still and noiseless manner so peculiar to the aborigines of North America, while another Indian stood in the bow, balancing the harpoon, and with it making signs to his fellow, as to the management and direction of the canoe. If a sturgeon was struck which the Indian could not lift, the wooden handle was slipped from the harpoon, to which, however, it still remained attached, by a long thong of leather or moose skin; the sturgeon would then make off with the handle in tow, closely followed by the canoe; before the fish was killed, some very animated struggles often took place, and not unfrequently the canoe would be upset. Other canoes would come to the rescue; more Indians would be tumbled in the water, not of very great depth; and the scuffle and splashing made by them and the fish, with the wild shouts and whoops of the Indians, rendered the whole an interesting and somewhat exciting scene.

The flesh of the sturgeon is like coarse beef, quite firm and compact, but very rank and unsavoury. The Indians cut it up in large pieces, and salt it for winter use; it is only eaten by those who can obtain no better fare. The flesh of a young fish is much more delicate than that of an old one; when stewed with rich gravy, its flavour is not unlike that of veal.

In the north of Europe, extensive fisheries are established for taking sturgeon. The celebrated *caviare* is made of the roe of the female; and isinglass is obtained from the dense membrane forming the air-bladder.

The sturgeon spawns in fresh water, before leaving it in the autumn, to return to the sea. It is said to spend the winter in very deep water, quite beyond the reach of nets, and as it has not been known to take a hook, is quite safe from the fishermen. The fry of sturgeon have never been noticed in the Saint John, and it is supposed that so soon as they escape from the eggs, they descend immediately to the sea, and do not return until they come again in their turn to deposit spawn.

## ORDER 2.—Fishes with fixed gills.

## Family 1.—SQUALIDÆ—The Shark Family.

Genus 1.—*Carcharias*.Species 1.—*Carcharias vulpes*—The Thresher Shark.

This shark is said to be common on both sides the Atlantic ; it is known from New York northwardly, by the various popular names of the "thresher," "fox shark," and "swingle tail." It pursues schulls of mackerel, mossbonkers, and shad, which it devours in great numbers. In pursuit of shad it is frequently taken of large size, both in Cumberland Bay and the Basin of Mines, at the head of the Bay of Fundy. It sometimes attains the length of 12 feet ; is of a slate blue colour above ; beneath, soiled white, marked with faint bluish spots. The first dorsal fin is triangular, a foot high, and nearly as long at its base ; the second dorsal similar in shape, but much smaller. Its principal organ of defence, appears to be its long, broad, and flexible tail, with which it attacks, and literally *threshes* its enemies.

This fish is a great enemy to the small whales, in the Gulf of Saint Lawrence. In the Bay of Chaleur, and lower part of the River Saint Lawrence, it is often seen attacking the whales which frequent those localities. In its attacks, it is most persevering ; and the whale may be often seen to spring quite out of the water, and make the sea foam, from the torment he endures.

Genus 2.—*Selachus*.Species 1.—*Selachus maximus*—The Basking Shark.

This huge fish usually exceeds thirty feet in length. Its body is cylindrical, fusiform, of a dark slate colour, the surface with numerous wrinkles, covered with minute sharp prickles, distributed in small groups, producing a roughness in the direction of the head. The teeth in the upper jaws, of various forms, recurved, edged, but not serrated ; in the lower jaw, seven rows, rather larger than those above. According to Dr. Storer, there are fourteen hundred teeth in the lower jaw alone.

The basking shark inhabits the northern seas, but occasionally visits the American coast during summer, as far south as Cape Cod. His large size, and habit of swimming near the surface, with his upper jaw projecting out of the water, as he moves with open mouth, in pursuit of his prey, has, in the opinion of Dr. DeKay, suggested to ignorant credulity the idea of some huge aquatic monster, which has received the name of *sea serpent* !

In August 1851, a fish of this species was taken off Musquash Harbour, in the Bay of Fundy, forty feet in length. While in pursuit of herrings, it became entangled in a string

of herring nets, and while so entangled, was killed after a long and severe struggle. The tail was 7 feet 9 inches in breadth, with a carina on each side; the head 5 feet across; the mouth 3 feet wide, between the angles of the jaws when opened. The liver of this fish yielded 320 gallons of oil.

The basking shark has obtained its popular name from its habit of remaining occasionally at the surface of the water, quite motionless, as if enjoying the influence of the sun's rays, whence on the coasts of Great Britain and Ireland, it has obtained the name of sun-fish. If deeply struck with a harpoon, it plunges suddenly down, and swims away with such rapidity and violence, as to become a very difficult capture. It is said to exhibit but little of the ferocious character of the sharks in general, and is so indifferent to the approach of a boat, as to suffer one even to touch its body, when listlessly sunning itself at the surface.

This fish is considered by naturalists, the largest of the true fishes.

### Genus 3.—*Spinax*.

#### Species 1.—*Spinax acanthias*—The Spinous Dog-fish.

This fish is found everywhere on the coast of North America, from the Delaware to Davis' Straits. It varies in length from one to five feet; it is of a slate colour above, dull white beneath. The skin is used for various purposes, but chiefly by cabinet-makers and others for bringing up and smoothing the surfaces of hardwood. The livers furnish a valuable oil; the fish themselves are often dried as food for cattle. In Nova Scotia and Cape Breton, it is dried in great quantities; and in the winter is fed to pigs, which are said to thrive well upon it.

The dog-fish, according to Dr. Storer, is so numerous about Cape Cod, that in spring and autumn, it furnishes an important fishery solely for its oil. It assembles in large schools, and feeds upon the offal and garbage thrown down by the fishermen; it cleans the ground so perfectly, that it is called the true "scavenger of the sea."

The dog-fish brings forth its young alive. In August 1849, at Point Miscou, in the Gulf of Saint Lawrence, the writer opened a female fish in a gravid state, and found the young perfectly formed; they were placed in the water with the sac attached, and appeared quite lively.

Mr. Couch, an English naturalist, asserts of this species, that it bends itself into a bow for the purpose of using its spines, and by a sudden motion causes them to spring asunder in opposite directions. So accurately is this intention effected, that if a finger be placed on its head, the dog-fish will strike it, without piercing its own skin.

## Family 2.—RAIDÆ—The Ray Family.

Genus 1.—*Raia*.Species 1.—*Raia lævis*—The Skate.

This fish is known on the North American coast, as the smooth backed skate, and is found from 2 to 4 feet in length. It is of square form; the body smooth, elevated in the centre; of a uniform light brown colour above; the tail long and slender, longer than the body, with three rows of spines.

The peculiar form of the skate adapts it admirably to exist near the bottom, and it may with more propriety be called a flat-fish, than any of the flounder family. Its mode of progression is not very easily described; when the fish is not alarmed, it is performed with a slight undulating motion of its pectoral fins, something between flying and swimming. When a skate is making its way to seize food, or to escape from an enemy, great muscular exertion is evident.

The young are produced in the latter part of spring, or during summer. They are deposited by the parent fish in thin horny cases, in form nearly square; these are often found along the coast, and being empty, are jocularly termed "sailors' purses."

As food, the skate is held in very different degrees of estimation in different places. In London, large quantities are consumed, and the flesh is considered delicate and well flavoured; but on some parts of the English coast, although caught in considerable numbers, the flesh is seldom eaten, and is used for baiting lobster-pots. The French are great consumers of skate; and its flesh is used extensively both at New York and Boston; by many it is deemed a great delicacy. After the fish is skinned, the fleshy part of the huge pectoral fins, which is beautifully white, is cut into long, thin slips, about an inch wide; these are rolled like ribbon, and dressed in that form.

The skate is found everywhere on the coasts of New Brunswick and Nova Scotia, and is frequently taken of large size, with hook and line, by cod fishers. The writer, while haddock fishing, in June 1848, in the Basin of Annapolis, saw two fine skate caught at once, each 30 inches over, which were in prime condition. In August 1850, while pollack fishing in 26 fathoms water off the eastern end of Campo Bello, near Head Harbour Light House, a skate was taken 3 feet over, weighing full 60lbs. It was not in good condition, having probably spawned; from the difficulty in bringing it to the surface, for the skate is exceedingly violent when hooked, it was supposed to be a halibut.

Dr. Storer states, that skate are sometimes met with near Boston, weighing 200lbs., and in his Report, he describes a male specimen sent to him from New Bedford, 54 inches long, and 36 inches wide.

With its powerful spade-like snout, the skate roots up clams, and crushes them between its flattened teeth, which appear to act upon each other like the cylinders of a rolling mill. It also feeds on other fish, for five different species, besides crustacea, have been taken from the stomach of a skate.

**Species 2.—*Raia erinaceus*—The Hedgehog Ray.**

While the writer was at anchor in Whale Cove, near the Northern Head of Grand Manan, in August 1850, a ray was caught, 18 inches long and 9 inches wide, which so closely resembled the hedgehog ray described by Doctor Mitchell, that it is believed to be the same fish. The form was more rounded than that of the skate; the surface of a pale brown colour, with several groups of prickles arrayed in regular lines. A double series ran along the vertebral line, and extended the whole length of the tail; on the sides of the tail, the prickles were very stiff and stout. It was caught near the shore, in less than two fathoms water, with a large sized trout hook, used for taking small pollack. When brought on deck, it rolled itself almost into a ball, displayed its prickles, and bore very great resemblance to a young hedgehog; if struck with a stick, it lashed about its tail in all directions, and seemed bent on defending itself to the uttermost. One of the men belonging to the vessel, after teasing it some time, threw it overboard, when it swam away, although it had been a long time out of water.

A careful examination of this genus will probably show that several other species exist on the coasts of New Brunswick and Nova Scotia, besides those now mentioned.

**ORDER 3.—Fishes with round mouths, formed into a sucker.**

**Family 1.—*PETROMYZONIDÆ*—The Lamprey Family.**

**Genus 1.—*Petromyzon*.**

**Species 1.—*Petromyzon Americanus*—The American Lamprey.**

The lamprey is very common in the fresh waters of the Lower Province. It ascends the Saint John in May, and passing into the smaller streams, generally selecting those which have stony or gravelly bottoms, it there deposits its spawn, among conical heaps of stones. They have been often seen in the summer, in pairs, at work together, constructing these mounds, which are about three feet in diameter at the base, and two feet high, composed of stones from the size of an ounce bullet to that of the fist; they often aid each other in carrying the same stone.

It is not known at what time the lamprey returns to the sea, as it always moves in the night; but there is an impression

that it dies in the fresh water after spawning. This impression may have arisen from the fact, that dead lampreys are often seen in the streams toward autumn. In August 1840, the writer, while trout fishing in the Nerepis, saw dead lampreys along that river for miles.

Mr. J. L. Price states to the writer, that the lamprey ascends the Miramichi, and all its principal tributaries, where numbers are frequently found dead toward autumn. He has often observed it, in August, evidently in a languishing condition, the head and throat greatly bloated, and the whole body covered with a white mucous secretion. Mr. Price has remarked one peculiarity of this fish, which distinguishes it from all other minor fish—when disturbed at the spawning season, it will pursue the intruder, however formidable, with great spirit, even beyond the bounds of the water.

The lamprey is usually of a bluish brown colour, mottled with dark olive green along the back; beneath, a uniform dull yellowish olive. The fore part of the body is round; the posterior part flattened. There are seven large branchial apertures back of each eye, passing backward in nearly a straight line, the first smallest. When the lamprey is unattached, the mouth is a longitudinal fissure; but when attached, it is circular, the lip forming a ring, furnished with hard horny teeth of a yellow colour, within.

This fish is believed to do much damage to mill dams built upon gravelly or sandy foundations, by working its way beneath the dam, through the sand and gravel, and occasioning leaks, which gradually undermine the dam and eventually lead to its destruction.

LeSueur, a French naturalist, in describing a lamprey from the Connecticut River, says the annular or ribbed appearance of the fish, is owing to the muscles, which are endowed with great strength, in order to enable it to burrow in the muddy sands of rivers, which it penetrates in a serpentine manner by means of its snout, the large lip performing the functions of a terrier.

The lamprey has been known to attain the length of 30 inches, with a girth of 6 inches. The writer has never known it to be eaten in New Brunswick, but in the United States and elsewhere, it is held in high estimation by epicures.



## LIST OF THE POPULAR NAMES OF FISHES IN THIS CATALOGUE.

I. *The Perch Family.*

1. The American yellow Perch.
2. The Striped Bass.
3. The White Perch.
4. The common Pond Fish.

II. *The hard cheeked Family,  
(Sculpin.)*

1. The common Bullhead.
2. The Greenland Bullhead.
3. The two-spined Stickleback.
4. The Norway Haddock.

III. *The Mackerel Family.*

1. The Spring Mackerel.
2. The Fall Mackerel.
3. The Tunny, or Albicore.
4. The Sword Fish.

IV. *The Goby Family.*

1. The Wolf Fish.

V. *Fishes with wrists in their  
pectoral fins.*

1. The American Angler.

VI. *The Wrasse or Rock Fish  
Family.*

1. The Sea Perch, or Cunner.
2. The Tautog, or Black-fish.

VII. *The Carp Family.*

1. The common Sucker.
2. The yellow Shiner.
3. The Roach, or Red-fin.
4. The Roach Dace.
5. The shining Dace, or Shiner.
6. The Chub.
7. The Brook Minnow.
8. The striped Killifish.

VIII. *The Sheat-fish Family.*

1. The common Cat-fish.

IX. *The Salmon Family.*

1. The Brook Trout.
2. The Great Grey Trout.
3. The Salmon Trout, (White Sea Trout.)
4. The Salmon.
5. The Smelt.
6. The Capelin.
7. The White Fish, (Gizzard Fish.)

X. *The Herring Family.*

1. The common American Herring.
2. The Britt.
3. The Shad.
4. The Alewife, or Gaspereau.
5. The Mossbonker.
6. The Shad Herring.

XI. *The Cod Family.*

1. The Bank Cod.
2. The American Cod.
3. The Tomcod.
4. The Haddock.
5. The Hake.
6. The Silver Hake.
7. The Pollack.
8. The Torsk, or Cusk.
9. The Fresh Water Cusk.

XII. *The Flat-fish Family.*

1. The Halibut.
2. The common Flounder.
3. The Sand Flounder.
4. The Fleuk.

XIII. *The Lump-fish Family.*

1. The Lump-fish.

XIV. *The Eel Family.*

1. The common Eel.
2. The Sea Eel.
3. The American Sand-launce.

XV. *The Sturgeon Family.*

1. The sharp nosed Sturgeon.

XVI. *The Shark Family.*

1. The Thresher Shark.
2. The Basking Shark.
3. The Dog-fish.

XVII. *The Ray Family.*

1. The Skate.
2. The Hedge-Hog Ray.

XVIII. *The Lamprey Family.*

1. The Lamprey.

In all, eighteen families, comprising forty genera, and sixty two species of fish.

## LIST OF WORKS CONSULTED.

In preparing the foregoing Catalogue, the classification of Baron Cuvier has been followed, as that generally adopted in the present day by the most eminent naturalists and men of science, and best understood.

The following is a list of the various works consulted, to each of which the writer is under greater or less obligation:—

*Regne Animal*, par M. le Baron Cuvier; translated with supplementary additions to the class fishes, by Edward Griffith, F.R.A., and Lt. Col. C. Hamilton Smith.

*Histoire Naturelle des Poissons*, par Cuvier, et Valenciennes, Tom. 21.

History of British Fishes, and Supplement, by Wm. Yarrell.  
*Fauna Boreali Americana*, or Zoology of the northern parts of America, by Dr. Richardson.

Report on the Fishes of New York, by Dr. J. E. DeKay.

Report on the Fishes of Massachusetts, by Dr. D. H. Storer.

Synopsis of the Fishes of North America, by Dr. D. H. Storer.

Observations on the Fishes of Nova Scotia and Labrador, by Horatio Robinson Storer—in the Boston Journal of Natural History for October 1850.

Fish and Fishing in the United States, and British Provinces of North America, by Henry W. Herbert, (Frank Forrester.)

The Deep Sea and Coast Fisheries of Ireland, by W. Brabazon.

Parliamentary Reports of the Board of British Fisheries, from 1843 to 1850, inclusive.

The writer earnestly requests, that this attempt to classify and describe the Fishes of New Brunswick and Nova Scotia, may be viewed with every indulgence, as the work of one who does not profess to be a naturalist, but simply an occasional observer of nature.

M. H. PERLEY.

Government Emigration Office,  
St. John, N. B., January, 1852.

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